

THE IRON AGE

THURSDAY, OCTOBER 8, 1891.

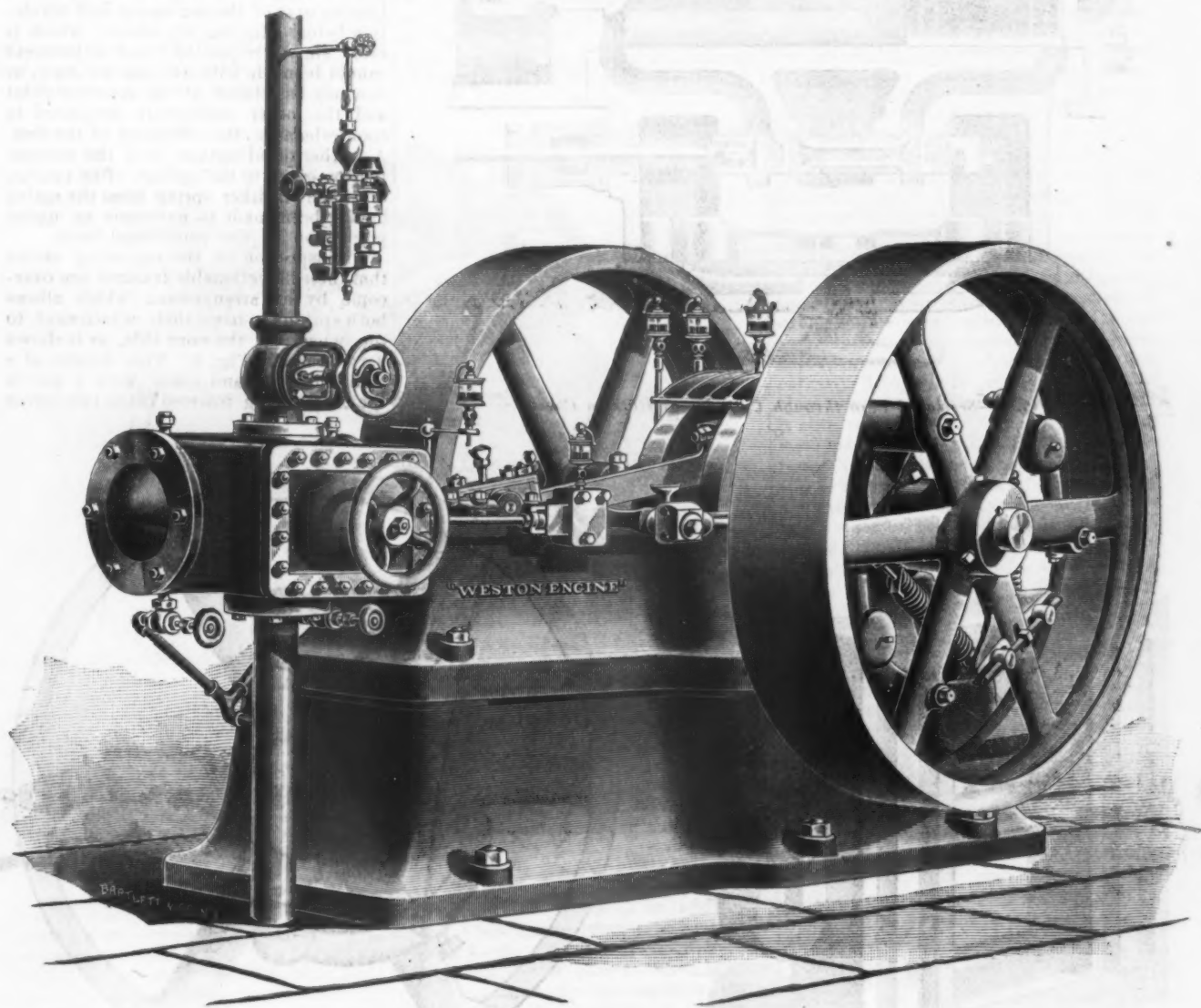
Weston Automatic Engine.

In the automatic steam engine built by the Weston Engine Company of Painted Post, N. Y., are many novel features of design and construction, all tending to make the engine durable, economical and of close regulation. The bed is made unusually heavy and is provided with interior ribs running across and lengthwise in sufficient number to make it absolutely rigid and proof against any springing tendency. The guides are a fixed portion

having accurately parallel faces, and works steam tight between its seat and heavy pressure plate.

The steam being admitted to the center port, Fig. 2, acts in a direction to lift the pressure plate away from the valve, which it is prevented from doing by springs which rest against the end of a set screw that passes through the steam chest cover and has a hand wheel on the outside. This arrangement admits of the spring tension being varied if found necessary, and also allows the release of the pressure plate from the valve upon starting the

tight for a long time, acquiring a beautiful polish and working without appreciable friction. Wearing down by its own weight does not open a leak, and when after long use leakage does occur, it is readily taken up by the adjustable pieces which support the pressure plate. These distance pieces are composed of two wedges, fitted together, one of which is doweled to the steam chest face, and has a projection on the end through which a set screw passes and enters the other wedge. It is by this screw that the adjustment for preventing leakage is made.



THE WESTON AUTOMATIC STEAM ENGINE.

of the bed and are planed and accurately scraped. The crosshead shoe is adjustable to accommodate wear and any adjustment made will always leave the engine in correct alignment. The main bearings have adjustable cheek pieces to take up wear, and all bearings have unusually large wearing surfaces. The reciprocating parts are counterbalanced by weights in the crank disks. The cylinder and steam chest are in one casting, the piston is hollow with cast-iron rings sprung into it for packing. These engines are made on the principle of interchangeability of parts.

The Valve.

shown detached and enlarged in Fig. 3 and in place in Fig. 2, is a single casting

engine, which is an important consideration, as valves of this type, as well as any other type, often stick, if left for any length of time without running. This arrangement does not prevent the valve lifting to relieve the cylinder of water the same as an ordinary slide valve. The action of the valve is clearly shown by the cut, and gives four openings for the admission of steam, the length of each equaling the diameter of the cylinder. This, together with a large travel and ample ports, gives a high steam line and a sharp cut off. The exhaust is through a double opening and is attended with the same advantages that characterize the steam admission. This form of valve, when properly fitted up, will keep

The Stuffing Boxes

are generally a source of more or less trouble, which the makers of this engine have succeeded in reducing to a minimum. The valve stem is packed only against exhaust steam and will run indefinitely without repacking. The connection of the rod to the valve is so constructed that any wear of the latter will not bind the rod in the stuffing box. The piston-rod stuffing box, as shown in the section of the cylinder, is of novel design and equally novel behavior. In this box there is a large amount of packing which cannot be very tightly compressed, and it is found that, if properly packed, the steam pressing on the gland follows up the wear and obviates any necessity for adjustment. A further

advantage is obtained by allowing clearance between the glands and body of the stuffing box, so that any wear of the cross-head shoe will not bring the piston rod to bear upon the glands, the clearance allowing the rod to assume any position without binding in the box. These engines have been run, without leaking, for over a year, without repacking or even adjustment.

connected by levers to the eccentric, while the centrifugal motion of these weights is resisted by centripetally acting springs, the free ends of which are attached to weight levers, the other ends being attached in an adjustable manner to the fly wheel.

With the governor at rest the tension of the springs will hold the eccentric in position of the greatest throw, but in action

meet, and a further complication arises from the position of the eccentric constantly changing to accommodate the variable loads thrown on the engine, thus requiring the spring and weights to be in equilibrium at any possible position. Centrifugal force increasing in a certain ratio makes it necessary to attach springs to the wheels at points that will increase the tension as the springs are distended in same ratio. These points of attachment cannot be found accurately by any method of calculation, and consequently the adjustable attachment must be resorted to. This enables in a very short time, by trial, to get the position of sensitiveness sought. It has been usual heretofore in this class of governors, when supplied with sensitizing device to accomplish adjustment from two points of the wheel, diametrically opposite. This arrangement is necessarily awkward, as it compels the turning over of the engine one-half revolution before effecting adjustment, which is often almost impossible; and adjustment cannot be made with extreme accuracy, as one may be placed at its sensitive point and the other sufficiently misplaced to counterbalance the efficiency of the first. A further disadvantage is in the unequal tension given to the springs, often causing breakage of either spring from the spring having been made to overcome an undue proportion of the centrifugal force.

An inspection of the engraving shows that these objectionable features are overcome by an arrangement which allows both springs to have their attachment to the wheel on the same side, as is shown very clearly in Fig. 1. This admits of a right and left hand screw with a nut in the center being inserted in the two spring

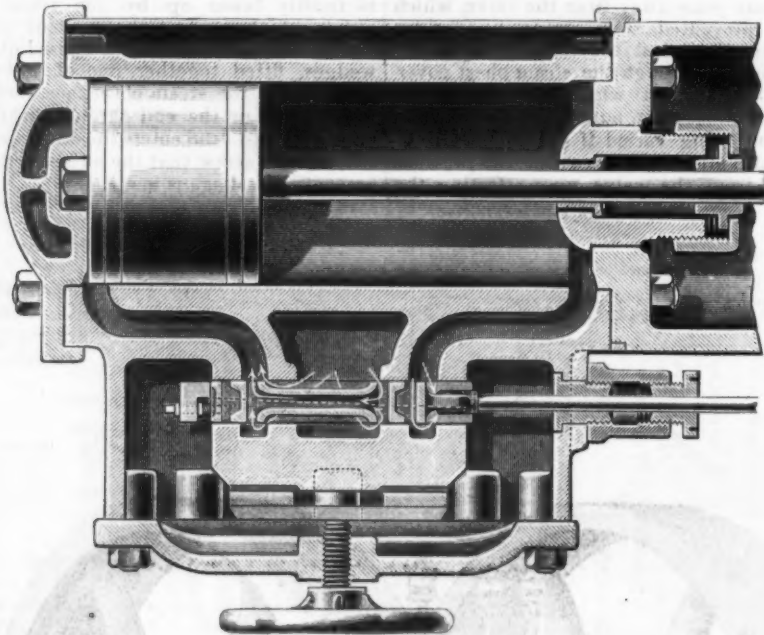


Fig. 2.—Sectional Plan through Cylinder and Steam Chest.

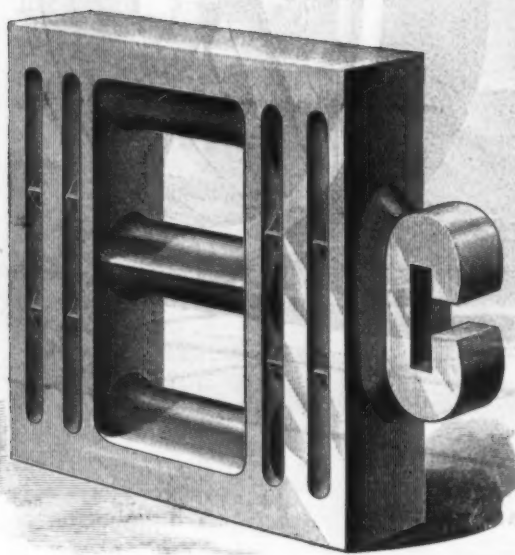


Fig. 3.—The Valve.

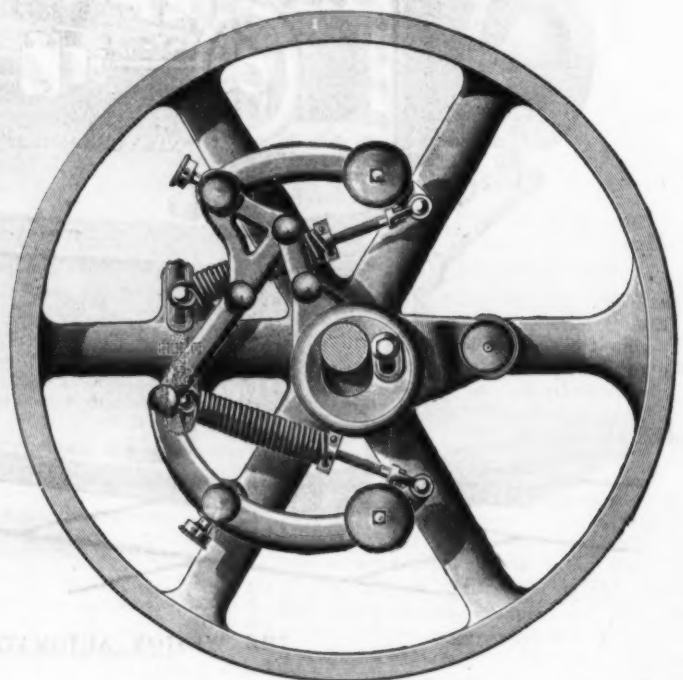


Fig. 4.—The Governor.

THE WESTON AUTOMATIC STEAM ENGINE.

The Governor.

shown in Fig. 4 and also in the perspective view Fig. 1, is very simple in design and is so arranged as to be easily and accurately adjusted. It is of that class which has a laterally movable eccentric surrounding the crank shaft of the engine by which the admission of steam to the cylinder is regulated through the variation of its throw. This variation is effected by the movements of centrifugally acting weights

the centrifugal force of the weights moves the eccentric across the shaft, reducing its throw as increased rotary motion takes place, until it reaches the point where the valve travel will be in accordance with the amount of steam necessary to drive the load. It is apparent that for any nicety of regulation, the centrifugal force and the centripetal force, as supplied by the weights and springs, should be in equilibrium. This is a requirement very difficult to

attachment pins, the turning of which moves simultaneously and at an equal distance the two springs nearer to or further from the pivotal points of the levers, thus accomplishing the regulation of the governor to a degree equaling isochronism if desired. With a governor so adjusted that the centrifugal force is in exact equilibrium with the centripetal force the condition is very unstable, and the least disturbance resulting from any

variation of load, speed or friction of the valve reciprocating parts will set up oscillations of the governor weights, which will swing rapidly back and forth through their whole range, and vary the speed of the engine accordingly. This is the condition known as "hunting," or "racing." To remedy this well-known objection dash pots have been used, but owing mainly to their sluggishness they are not applicable to all classes of engines. In this engine the difficulty has been obviated by so arranging the weights with relation to the weight lever pivots and the points of attachment to the eccentric that their own inertia will destroy any tendency to vibration. This governor has proved to be so effective that the makers guarantee a regulation to within 2 per cent. from friction to full load, and with any change in boiler pressure to a point so low that the engine must take steam seven-tenths of the stroke to do the work.

The Adjustment.

Of course the engine is set at the required speed before it leaves the works, but should any change be required it is

brasses are held tightly by this cap clamping them. They may be filed apart any amount to accommodate the full range of adjustment. This adjustment is made by loosening the nut's binding cap, and turning a screw that passes through a wedge-shaped iron block fitted between the brasses and rod butt. This screw bears at one end on the rod and at the other against the underside of the cap. A continuation of the screw passes through the cap and has a jam nut to lock it after adjustment, with a portion sticking through the nut, having a hexagon cut thereon, allowing the use of a standard wrench for the operation of the screw, the turning of which will move the brasses nearer to or further from the pin. This method has advantages, especially in the high-speed engine, where space is so limited. The crank end is a box with a cap, attached to the rod by bolts, adjustment being made by the removal of the liner, or fling distance pieces on the cap. The rod maintains a permanent length, or so nearly the same that the difference is inappreciable, the variation being only in the amount one box wears more than the other.

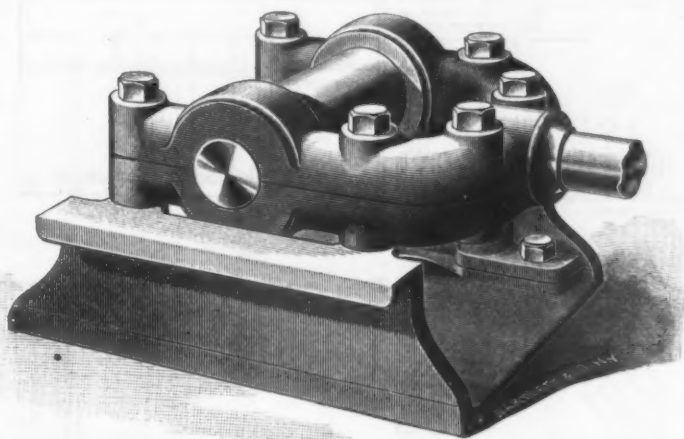


Fig. 5.—The Crosshead.

THE WESTON AUTOMATIC STEAM ENGINE.

accomplished by moving the weights toward the pivotal points of the levers for higher speeds or toward the ends of the levers for slower speeds. If this will not give the required result, further change may be made by increasing the tension of the spring for higher or decreasing the tension for lower speeds.

Crosshead.

A novel feature is presented in the construction of the crosshead, which consists of a U-shaped yoke made in two parts, separated on a plane parallel with the guides. In constructing it a liner is placed between the two pieces, which are then bolted together. The parts are then tapped for the piston rod and bored for the pin. After this the liner is removed and the pieces bolted together solidly on the rod and pin, thus making a positive connection between connecting rod and piston. This arrangement also admits of a very large pin proportionate to the weight, as no extensions are needed for nuts or other clamping devices. To further lessen the weight on larger sizes the pin is made hollow.

The Connecting Rod

is a steel forging, polished all over. The crosshead end is constructed so that the brasses may be removed without taking out the pin. This is accomplished by cutting out the top of the rod and fitting on a cap which is held in place by two studs, thus making it fully as rigid as a solid end. These

All the bearings are oiled from stationary sight feed oil cups and can also be oiled from an oil can while in full motion.

The oil wasting from the boxes on the inside is caught in annular rings on the sides of the crank disks and passed to the crank pin through holes in the disks intended for that purpose, while on the eccentric side a snap ring is sprung over the crank shaft and extends inside of the eccentric, which serves as an additional means of lubricating that part, as the oil running to the ring is thrown off by centrifugal force and passes through holes in the eccentric to the eccentric strap. Oil flying from the bearings is caught in the base, from which it can be removed, filtered and used again. With the engine is furnished a cast-iron sub-base, which is intended to facilitate the setting of the engine and dispense with cap stones, thereby reducing the cost of foundation.

A New Method for Nickel Plating.

To the very comprehensive character of his researches on this subject Ludwig Mond probably owes his admission to the Royal Society. It will be seen that the investigations, reported at the last meeting of the British Association, in which Mr. Mond was assisted by Dr. Carl Langer and Dr. Frederick Quincke, open a wide perspective of useful application. In 1889 it was observed that nickel com-

pletely dissociated carbonic oxide at 350° C., while Victor Meyer did not succeed in completely dissociating this gas by heat alone at 1690°. A very small quantity of nickel suffices for the dissociation of large quantities of carbonic oxide, and becomes converted into a voluminous black mass, which takes fire on exposure to air, a gas being generated at the same time in which the investigators at first suspected the gnomium of Krüss and Schmidt, but which contained no metallic element but nickel. Nickel and carbonic oxide therefore gave a gaseous compound which was condensed into a colorless, mobile, very volatile liquid of characteristic odor, soluble in many organic solvents, alcohol, ether, benzole; it boils at 43° C. and explodes when suddenly heated and as vapor mixed with air. Prof. Vernon Harcourt inquired how a liquid of such amiable properties—it is poisonous, too, and when injected into rabbits depressed the temperature in an extraordinary degree—could be sealed in a tube. He had himself made a little of the substance which kept on exploding spontaneously, so that he was pleased to leave it alone. Mr. Mond simply pointed to the long tube in his hand, which had traveled to Rome, and continued to handle it as if it were a stick. The liquid solidifies at -25° C., and yields crystals of the formula Ni(CO)₄. The substance is surprisingly inactive, being hardly attacked by acids, alkalis, or metals, except oxidizing agents; and its molecular refraction and dispersion and magnetic rotary power are not only abnormally high, but afford strong grounds for placing nickel in the eighth group of the periodic law of Newlands-Mendeleeff, so that its valency, apparently two, would really be eight, as often suspected. The expansion coefficient is also very high. These determinations were made for and with Mr. Mond by Professor Nasini of Rome, Dr. Perkin, F.R.S., and Professor Quincke of Heidelberg. Very many experiments were made to obtain similar carbon compounds with other metals; cobalt, for instance, one should think, would surely yield an analogous body. But all attempts failed, except those with iron, from which after long trials an amber colored liquid, crystallizing at -22° C., has been obtained. This very failure justified the hope of being able to extract nickel by means of carbonic oxide direct from its ores, such as nickel speiss, and matte; and in the case of nickel combined with arsenic and sulphur, the process is entirely successful, at any rate on a laboratory scale. The nickel can be extracted almost completely in three or four days, and the resulting gas, when heated to 200° C., gives a bright coherent nickel mirror, quite free from other metals, except traces of iron. For this purpose the speiss is calcined, reduced by water gas at a temperature of 450° C., evolved and treated with carbonic acid in any suitable apparatus; when the nickel mass becomes sluggish, it is regenerated by being heated to 350°. The gas leaving the chambers is passed through tubes heated up to 200° C., where it condenses in brilliant mirrors, several of which were exhibited; to facilitate the deposit, thin nickel sheets are inserted in the tubes. Now this condensation may also be produced on other metals, and Mr. Mond showed some remarkably fine specimens of nickel plating, beakers, medals, brass tubing, &c.

The last issue of the transactions of the American Society of Civil Engineers contains the following valuable papers: "Chimney of the Narragansett Electric Lighting Company," by John T. Henthorn of Providence, R. I.; "Sections and Mechanical Conditions of Car Wheels," by P. U. Griffen, and "A Memoir on Water Meters," by John Thomson of New York.

Handling of Ingots and Molds in Bessemer Steel Works.*

BY GRAM CURTIS, PITTSBURGH, PA.

The keen and close competition now ruling in the iron and steel manufacture requires imperatively, in the design and construction of the machinery employed, the fulfillment in the highest practicable degree of two cardinal conditions—economy of labor in operation, and durability. The daily pay roll and the cost of repairs far outweigh in importance the interest on the first cost of this part of the plant.

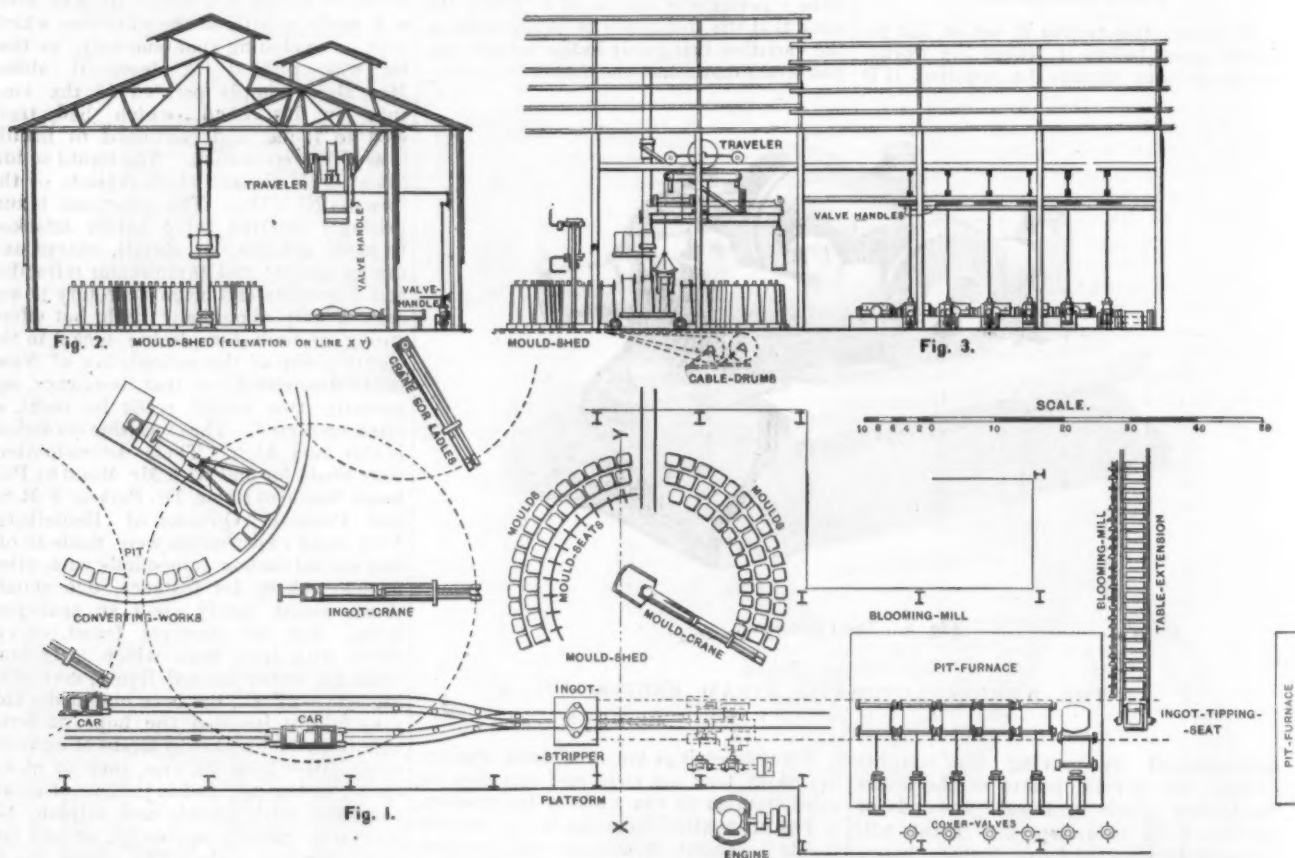
It is believed that the apparatus here described will be found to embody, in these respects, a substantial improvement upon the present manner of handling in-

platform adjacent to the last-named machine. After passing through the stripper the car is halted in the position shown in Fig. 3, where the (now loosened) hot mold is lifted off and conveyed to a cooling seat by the mold crane, which, on its return trip to the car, picks up a cold mold, replacing therewith the one just removed.

The mold crane is operated by a boy, located on the platform which it carries, and from this point not only the hooks which engage the mold are handled, but all the motions—the rack, the lift and the swing—of the crane are controlled.

While the removal of the hot molds is in progress the traveler, or overhead buggy, is engaged in conveying the stripped ingots to the furnace and placing them in the pits, also in drawing the heated ingots and placing them on the tipping seat, whence they are

As the ingot extractor, Figs. 4, 5, 6 and 7, forms a sort of center or nucleus of the system, and also possesses some novel characteristics, it deserves a description somewhat in detail of its construction and operation. It is of the vertical type, and consists of two hydraulic cylinders connected by heavy steel bars, as shown in Fig. 4. The ram of the smaller cylinder, placed above, works downward, and has a stroke of 3 feet 9 inches. The larger cylinder, 30 inches in diameter, with a stroke of 11 inches, is in a pit bridged by the rails and covered with floor plates. The car from the casting pit is stopped with the first ingot directly under the upper cylinder, the ram of which is then caused to descend, by exhausting the water pressure from below it, until it rests upon the ingot. During the descent water (not under pressure) flows in above through the balanced check valve shown, and becomes imprisoned by



THE CURTIS PLANT FOR HANDLING MOLDS AND INGOTS.

got and molds at our large steel works. Although it includes a number of novel features, it consists essentially in the choice and grouping of certain approved economical devices specially suited to the particular service required. Fig. 1 is a plan and Figs. 2 and 3 are elevations of parts of a Bessemer converting house, together with a small portion of the blooming mill—sufficient to illustrate clearly the means and manner of handling the ingots and molds.

A short cable road of simple form, somewhat similar to those used in nearly all large cities, is laid on the floor of the converting house, within the orbit of the ingot cranes. The two tracks of this road converge into one just before reaching the ingot extractor. The movements upon these tracks of the cars carrying the molds and their inclosed ingots, and also the action of the stripper, which forces the ingot free, are under the perfect control of one operator, stationed on an elevated

delivered to the blooming train. This buggy is, in fact, a light, quick-working traveling crane; it is actuated by wire rope, and is capable of all the motions necessary for thorough handling. Besides the lift, longitudinal travel and a side movement by which it completely covers the furnace pits, it has power to seize or release the ingot and also to revolve the tongs through an arc of 180°. The whole is under the control of a man seated upon a platform suspended from the buggy frame; and by bringing the handles to the furnace-cover valves within his reach—through a simple bell crank and a couple of rods—the same man is enabled to open and close the furnace pits during his operations of charging and drawing. In order to enable him also to manipulate the covers while the car is yet in motion, approaching or receding from its position directly over the pit, the valve handles are made horizontal bars, some 6 feet long, making the valve accessible during that length of travel. This arrangement utilizes the time expended in the stopping and starting of the buggy.

that valve the instant the ram ceases to move. The lower cylinder—capable of lifting some 280,000 pounds—is now put in operation, and the movable seat which carries the mold, but not the ingot, is lifted, forcing the mold from the ingot, which quietly drops upon the seat, where it remains after the mold has been lifted off by the crane. This is more clearly shown in Fig. 7. In its trip back to the converting house the car runs upon its proper track automatically, without any attention from the workmen.

In the mode of handling which I have described much of the arduous labor ordinarily performed at the pit vanishes, and this point ceases to be a throttle upon the output of the plant. Much of the heat is carried to a point where it can be more easily dealt with—where the hot molds and ingots can at least be handled from behind screens and at a distance.

By the plan of mold shed shown a whole storehouse of molds may be conveniently kept within immediate reach, and this without the need of a locomotive and mold cars, thus saving the yard room

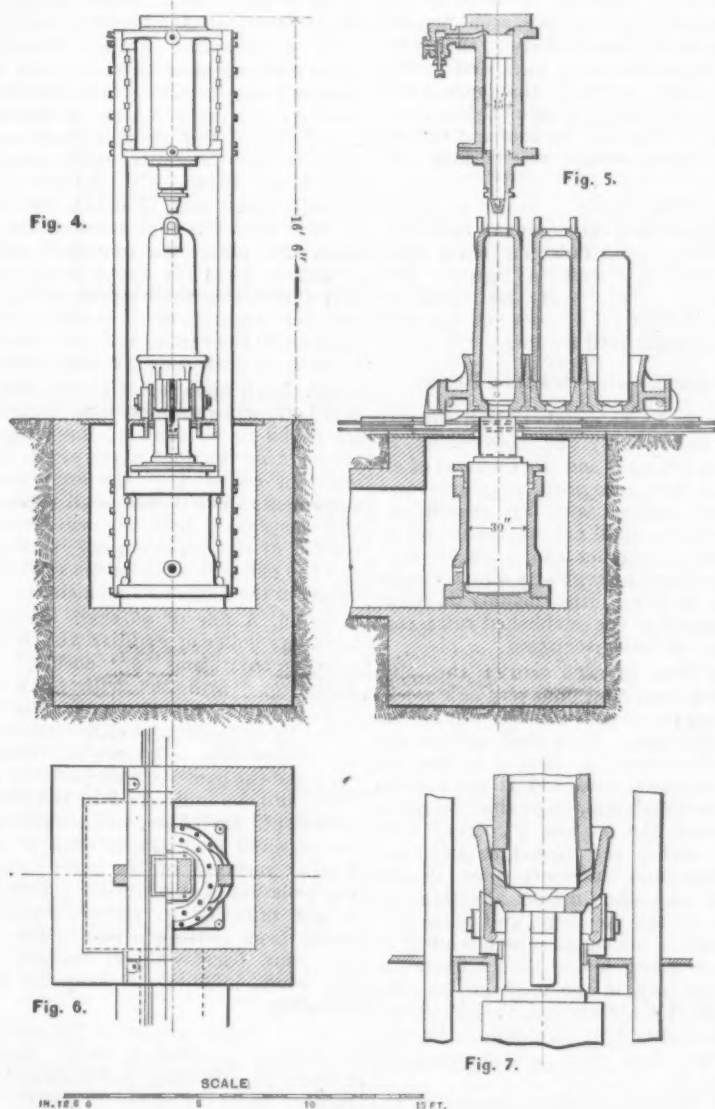
* Read at the Glen Summit meeting of the American Institute of Mining Engineers.

needed for the requisite tracks and switches. The large number of molds at command permits time for slow cooling by the draft which their high temperature naturally creates, an item which, in combination with the powerful extractor, will contribute in no small degree to the material prolongation of their term of service. To facilitate the circulation of air in and around them, and to permit their ready inspection and repair (by the cementing of cracks and defects), the molds may be placed on open seats supported on posts, and arranged over a circular pit some 4 feet deep.

Many other points—minor, perhaps, but important—such as the simplicity and

Men Required for the Handling (i. e., the Setting of Molds in Pit, Stripping, Heating, and Delivery to Blooming Train) of 420 Ingots (Equivalent to over 840 tons of Steel) in 24 Hours.

- 1 man setting molds in pit.
- 2 pulpit boys—1 to each ingot crane.
- N. B.—These cranes lift, rack, and swing from the pulpit.
- 4 men to hook molds at pit, guide them to seat in cars, &c. 2 men to each ingot crane.
- 1 man at ingot stripper, handling cars and stripping ingots.
- 1 man on mold crane, lifting off hot molds and replacing them with cold.
- 1 man on traveler, conveying ingots from car to furnaces; also from furnaces to blooming train.
- 2 heaters—1 on each furnace.
- 2 heaters' helpers—1 on each furnace.



THE CURTIS INGOT EXTRACTOR.

directness of all the motions given to the molds and ingots during their manipulation, the readiness with which the mold cars may be detached from the cable and temporarily handled by the narrow gauge yard locomotive in case of accident to the drag out rig, &c., might be indicated; also works where the different devices (overhead travelers, &c.) have been in similar and successful service for years might be enumerated. But metallurgical engineers will scarcely need enlightenment on these points, and I content myself with presenting, as the best data for criticism and comparison with present practice, the statements tabulated below concerning the number and duties of the workmen required for the operation of the apparatus described.

- 4 bottom makers—2 on each furnace.
 - 1 man at tipping seat.
 - 1 man at engine.
 - Making a total of 18 men and two boys per turn, and dispensing with the customary locomotive, its driver and switchman.
- This is believed to be considerably less labor than that required for the same purpose at any existing plant yielding the same output.

E. G. Edwards of the Dyffryn Steel and Tin Plate Works, Swansea, Wales, son of Daniel Edwards, one of the largest tin-plate makers in the world, is making a tour of the United States. Daniel Edwards is the patentee of tinning apparatus for coating tin and terne plate, for which he has appointed F. R. Phillips of Philadelphia sole agent.

Depression in Sheffield.

The Sheffield, England, *Telegraph* discourses dolorously respecting the condition and prospects of the cutlery trade in that city, owing to alleged hostile legislation in the United States. In addition to other adverse influences the reciprocity treaties with Spanish-American countries are referred to as presaging worse evils to come. We copy as follows:

"We have not yet experienced the worst effects of the McKinley tariff act. The United States Government is making efforts to secure the American markets to the South by offering tariff inducements. Separate treaties are being negotiated with Brazil, Mexico and Spain, the latter power having control of the Cuban market, and the arrangements, if successful, may lead to the most disastrous results to the trade of this country. It is stated that already an undertaking has been entered into with Brazil. Four years ago the United States Government attempted to negotiate a reciprocity treaty with Mexico, but failed in the attempt." This was written on May 2, from information supplied by a Sheffield manufacturer. As a proof of the correctness of the forecast made by our informant the new reciprocal treaty entered into by Spain with the United States may be cited. This will deal a very heavy blow to our already decreasing trade. On condition of the exemption of sugar, honey, coffee, and hides coming from Cuba and Porto Rico from all duty on their importation into the United States, Spain undertakes to admit free of duty into those islands cast iron in pigs, old iron and steel, cast iron in tubes, girders, &c., iron and steel wrought into bars and rails, bars of all kinds, trowels, iron and steel wrought into wire nails, screws, nuts, tubes, farm tools and agricultural implements, machinery, motors, &c. Another schedule of the treaty provides that the following, among other productions and manufactures of the United States, shall be admitted into Cuba and Porto Rico with a reduction of 50 per cent.: Cast iron (fine manufacture), polished or lined with porcelain or other metals; wrought iron and steel in axles, tires, springs and wheels for carriages, rivets and sockets, wrought iron and steel (fine manufacture), whether polished or plated with porcelain, partially, or with other metals; steelyards, needles, pens, table knives, carving knives, razors, and knives generally, penknives, scissors, pieces for watches or similar articles of iron or steel, tin plate, in sheets or manufactured, &c. A portion of the treaty has already been enforced. It is feared that by holding the McKinley act as a threat over Yucatan, Mexico, will be forced into a similar reciprocity treaty with the States. Manufacturers in Sheffield are being rapidly cornered by these repeated attacks upon foreign markets. The Washington Government is using the great power of the McKinley act as a lever by which the United States may be lifted to the highest commercial rank across the Atlantic.

The editor adds: "There are already evidences of dislocation of trade between this country and Cuba. Our representative was assured by a leading manufacturer of this town that a large consignment of goods which he had made ready for forwarding to the Spanish West Indies had been stopped, and that he had sought in vain to find a market which offered the same advantages as Cuba. With Chili and Argentine in a ferment, with the United States market blocked by a huge tariff wall, and with Mexico and Brazil threatened, he had come to the conclusion either that Englishmen must cast aside their old business notions or lose the entire American trade. As matters stand at present Sheffield manufacturers are being rapidly cornered, like rats in a pit."

The Amalgamated Association-II.

A FEW CHAPTERS FROM ITS CONSTITUTION.

ARTICLE XI.—SCALE OF PRICES.

Section 1. Wherever practicable steps shall be taken to provide a scale of prices for every trade or calling in each district represented in this association, but no scale or price shall be considered by the Executive Committee, or the convention, unless the same has first been presented to and demanded of the firm.

Sec. 2. When it is found necessary that the scale of prices governing any department of a mill or factory needs revision, such department shall submit in writing to their lodge the alterations desired in their scale on or before the first meeting in the month of March. Each lodge shall then consider such desired changes, shall vote by written ballot thereon, and report the result in writing under the seal of the lodge to the general office of the association. No Sub-Lodge under the jurisdiction of this Association, or member thereof, shall countenance the holding of meetings outside the lodge room for the purpose of agitating class legislation for advanced wages, and no lodge in this Association shall receive or act upon matters discussed, originated or in any manner acted upon outside of the Association relative to class interests.

Sec. 3. When all desired alterations to the several scales are received at the general office from sub lodges, which shall be on or before the first Tuesday in April, the secretary of the National Lodge shall get the same printed in pamphlet form, together with the suggested amendments to the laws, and forward a copy thereof to every sub-lodge six weeks prior to the meeting of the next annual convention.

Sec. 4. The proposed alterations to the several scales and amendments to the general laws, as compiled and sent to sub-lodges by the secretary of the National Lodge, shall then be discussed in each lodge, and the action of the lodge be given to the delegates of the lodge, who shall carry the same to the national convention.

Sec. 5. The suggestions pertaining to the scale of wages, and contained in the programme of business, shall be referred to the Wage Committee at the annual convention, and the president of the National Lodge is empowered to call the Wage Committee together three or more days prior to convening of the annual convention, at his discretion, for the purpose of considering the scale suggestions and preparing a report thereon for the annual convention.

Sec. 6. In order to aid the Wage Committee in their work, the corresponding representative of each lodge must send to the general office, two weeks prior to the meeting of the committee, a statement giving the condition of their mill, the amount of work done the past year, the feeling of the members of the lodge regarding wages for next year, stocks in hand, if any, and what kind, and any other information that will aid the committee and convention in arriving at a proper understanding on the wage question.

Sec. 7. To change the basis of any scale it will require a two third vote of all the delegates present at the annual convention.

Sec. 8. In iron rail, steel rail and converting mills, all departments in said mills shall have their several scales expire on June 30; and when it is found necessary that the scale of prices governing any department of such mills needs revising, such department shall submit in writing to their lodge the alterations desired in their scale

on or before the first stated meeting in March. Each lodge directly interested in such scales shall then consider such proposed change at the first stated meeting in April, at which a vote shall be taken by written ballot, requiring a two-thirds majority to adopt, and if the committee appointed by the lodge fail to agree with the company, the case shall be referred to the Executive Committee of the district or division for final action.

Sec. 9. Unless the scale is signed in conference three copies shall be sent out by the secretary of the National Lodge, and when signed, one shall be kept by the firm, one by the lodge, and the third be sent to the general office of the association.

Sec. 10. The scale, unless signed in conference, shall be presented to the manufacturers for signature by members of the Mill Committee representing each department, one week prior to July 1, the commencement of the scale year, and notice shall be given by them that unless the scale of prices be signed on or before June 30, all departments of the mill and factory will cease work, except roll turners and engineers.

Sec. 11. That when a stock of muck bar is on hand and the company not wishing to boil iron, the finishing mills shall run on after the scale is signed. But when ready to boil, every man shall receive his own job; if he does not the mill shall cease work until he does.

ARTICLE XVIII.—SPECIAL RULES.

Section 1. Every member shall interest himself, individually and collectively, in protecting his trade and the business of all employers who recognize, negotiate and are under contract with his association. This, however, shall not be construed to mean that a member can work for anything less than the regularly adopted scale of prices, or in any other manner do what is detrimental to the established rules, customs, &c., of this association.

Sec. 2. That in each works the Mill Committee shall wait on every new workman, when employed, and ask him for his withdrawal card. They shall deliver the same to the secretary. But if he has not got a withdrawal card and is not a member of the association, steps shall be taken to persuade him to join it. They shall carefully watch and attend to any complaint that may suddenly arise in the works, or any other matter affecting the interests of the members, and when it is found that a manager, superintendent or foreman is using his or their influence in persuading men in the mills or factories not to join this Association, they shall severally be notified by the Mill or Factory Committee that such action must be stopped.

Sec. 3. When a vacancy occurs in the boiling department the oldest boiler, if he so desires, shall have the preference of the furnace so vacated. Five heats, double turn, shall constitute a day's work for boilers working common iron; six heats, single turn, and hot more than ten heats in 24 hours shall be made under any circumstances. Where \$1 or more per ton is paid extra for boiling charcoal or dephosphorized iron, five heats shall constitute a day's work, single or double turn. The uniform charge of pig iron in a single boiling furnace shall not exceed 500 pounds per heat, but in neither case shall this apply to furnaces working castings; for a double boiling furnace the charge for pig iron shall not exceed 1000 pounds per heat; for a double-double boiling furnace the charge for pig iron shall not exceed 2100 pounds per heat; for a "twin" furnace (where there are two doors on one side only, close together) the charge for pig iron shall not exceed 1100 pounds per heat; for a Siemens-Martin furnace the charge shall not exceed 1400 pounds per

heat; for a Swindell furnace the charge shall not exceed 1300 pounds per heat. Castings in a single boiling furnace shall not exceed 2500 pounds per turn on double turn, and 3000 pounds on single turn, and 6000 pounds for double furnaces on single turn. The product of a single boiling furnace working cast-iron swarth shall not exceed 2800 pounds per turn, a double boiling furnace 5600 pounds per turn, and a double-double boiling furnace 11,200 pounds per turn. The charge for scrap furnaces on cinder bottoms shall not exceed 6000 pounds per turn for scrap, and not more than 3200 pounds per turn for one-third scrap and two-thirds swarth, and on sand bottom furnaces 9000 pounds of scrap per turn; but none of these stipulations apply to other gas furnaces. For fixing furnaces the men shall be given all the necessary ore the furnaces require.

Sec. 4. Any iron worked in a boiling furnace taking more than one and three-quarter hours to make a heat shall be considered a grievance, which, on demand of a majority of the members working hard iron, the Mill Committee shall report to the boss, in accordance with Article X of the Constitution. And if at any time within 30 days from the expiration of the above three days' notice the iron shall again be as bad as when the notice was given, the Mill Committee shall report to the boss, and the night turn, if working double, shall finish their turn, and they shall then cease work until they get better iron.

Sec. 5. If, upon investigation, any of the Sub-Lodges governing boiling departments are found to be allowing the violation of clause 2 of the foot notes of the boilers' scale, or clause 3 of the memoranda of agreement, a fine of \$20 shall be imposed, and suspension from all benefits or protection of the organization, if necessary, and the names of such lodges shall be published in the financial statement.

Sec. 6. A fine of \$5 shall be imposed upon any boiler or puddler who is known to put in any "jams" or "cheeks," "back walls" or "bridges" with brick or fire clay, and upon proof thereof a fine of \$5, followed by suspension, shall be imposed upon any boiler who is known to violate this rule, and the names of such party or parties shall also be published in the quarterly statement. Such fines, when imposed, shall be collected from the member at the first regular meeting of his lodge succeeding the violation of this section. This section is not intended to prevent a puddler or boiler from putting a ball of fire clay in the jams, back walls or bridges during the week, in order to keep his furnace working.

Sec. 7. Every member of this association is strictly prohibited from employing helpers at a boiling, puddling or heating furnace under the age of 15 years.

Sec. 8. Sheet mills shall be allowed to work three turns, but no turn shall exceed eight hours; and on sheet mills working three turns, the number of pairs shall not exceed 180 for single iron or 105 pairs double iron for a turn's work (except in such small sheet mills where orders under 14 square feet are to be averaged up to 24 inches wide by 93 inches long, in which cases no heat shall contain more than 30 pairs), and no single or double turn sheet mill shall exceed 216 pairs single iron or 120 pairs double iron for a turn's work.

Sec. 9. That all day hands on sheet and jobbing mills, that are members of the Association, having any grievance, shall present the same to the roller or manager, as the case may be, and if the trouble is not adjusted it shall be referred to the Lodge, and if the Lodge fails to settle the case it shall be referred to the Vice-President of the district, and in case he cannot settle the difficulty, he shall call his Executive Board together, and, in conjunction with the President of the National Lodge, they

shall render a decision in the case, which decision shall be final.

Sec. 10. When a roller leaves a sheet or jobbing mill from any cause, the rest of the crew shall retain their positions.

Sec. 11. All iron rolled on sheet and jobbing mills required to be sheared shall be pulled up to the shearmen's standing by the company ready for shearing.

Sec. 12. No nailer shall run his machines (a job) for anything less than full price, or pay more than one-half for feeding.

Sec. 13. No nailer under the jurisdiction of this association shall be allowed to buy any part or parts of an automatic feeder, rods or anything pertaining to the same, excepting nipper sockets, in any factory.

Sec. 14. That no member in any works shall render any assistance or loan his tools to any workman who persistently refuses to become a member of this association, or refuses to pay up his arrears to the same, or uses his influence to disorganize his fellow workmen and make it difficult to carry out the objects of this association.

Sec. 15. Any mill under the jurisdiction of this association running double or treble turn three or more months in one year shall be considered a double-turn mill, and in the event of such mills going on single turn the work shall be divided.

Sec. 16. Should any department of a mill, running single, double or treble turn, be stopped through overproduction or other causes, the work shall be equally divided, except when a furnace is out for repairs, and any person taking a job on conditions shall be branded as a "black sheep."

Sec. 17. This association will not tolerate any man holding more than one job. One furnace single turn, one train of rolls double turn, one steel smelting gas furnace both turns, or two steel smelting gas furnaces single turn to constitute one job, and all are expected to enforce this rule. Any man holding two or more separate jobs, in violation of this section, shall be stigmatized as a "black sheep." By "two or more jobs" is meant where one man draws pay for two or more separate jobs at the same time. No person shall be allowed to work two or more consecutive turns at his job in a mill or factory when there are members out of employment, in the immediate vicinity, fully qualified to do the work.

Sec. 18. Any member known to go to his work drunk, or who shall lose any work through drunkenness, and the foreman of the mill discharges him, no steps shall be taken by his lodge to reinstate him in his work. Any member acting in a manner detrimental to the interests of, or that will bring reproach upon this association or its members, shall be reprimanded, fined, suspended or expelled from the lodge in which he holds membership.

Sec. 19. The members of this association shall not injure each other in their employment, such as undermining or conniving at member's jobs, when such a member is known to be standing out for his rights and trying to obtain those privileges which properly belong to the members of this association. Any member taking a job in such a way shall become unworthy of membership, and be expelled from the association.

Sec. 20. The several members of all lodges shall, as much as in their power, endeavor to establish and make permanent the same, and use all honorable exertions to secure employment for any member of this association, in preference to all others. They shall also give a helping hand to each other in the works, as much as it may be in their power so to do.

Sec. 21. Except on questions of wages regulated by scale of prices, two weeks' notice shall be required from employers

before a reduction can take place, and two weeks' notice shall be given when an advance is requested, and any rules agreed upon by the Mill or Factory Committee and company, and ratified by a two-thirds vote of the Lodge, cannot be changed unless two weeks notice has been given by either party.

Sec. 22. In voting on all questions involving the shutting down of a mill or factory for the purpose of sustaining a member who has been discharged, or for other causes, the written ballot shall be used.

Sec. 23. When it shall be found beyond a doubt that any member of this association, in any mill under its jurisdiction, is working below the prices established by it, the men in such mill shall cease work until such prices are rectified.

Sec. 24. No member of this association shall be allowed to change or alter rules existing in any mill before submitting the desired change to the lodge having control of the department for which the change is intended; and if a majority of all members of the lodge vote in favor of said change, the Mill Committee shall notify the superintendent of said change before the same goes into effect.

Sec. 25. Any member having worked at any of the trades in iron or steel or factories shall not be termed green hands, provided they are members in good standing of this association.

Sec. 26. Any person employed as foreman, puddle boss, superintendent, or general manager of any mill or factory, or holding any of the above positions, together with a situation in the mill or factory, shall not be eligible to membership in this association.

Sec. 27. That the members of this association shall, at the discretion of the president of the National Lodge, refuse to work in any mill or factory where the manager, superintendent, foreman or puddle boss is deriving a direct benefit from a furnace, rolls, &c., in addition to his position as above, for which he receives a regular salary.

Sec. 28. Should any member of this association undertake to instruct an unskilled workman in any of the trades represented in this association, it shall be the duty of the Mill Committee to notify him that this association cannot tolerate such proceedings, and should he still persist in doing so, charges shall be preferred against him and he shall be expelled or suspended, as the lodge may determine.

Sec. 29. Any member or members of this association having procured credit for groceries, provisions or clothing during a strike, and who refuses to pay or to make arrangements to pay the same, he or they shall receive no protection from the Mill Committee or the lodge in case of discharge by the manager, upon the complaint of the person or persons to whom such debt or debts are owing.

Sec. 30. In case one department of a mill is found to be privately working at a less rate of wages than is provided for through the regularly adopted scale of wages of this association, and such terms and agreement coming to the knowledge of the officers, all other departments in said mill shall cease work in order to enforce the price specified in the scale.

Sec. 31. The foreman on each separate job in steel works shall, in conjunction with the Mill Committee, have the privilege of filling a temporary vacancy.

Sec. 32. In each mill under the jurisdiction of this association, the weight of each turn's work shall be displayed on a board, in some conspicuous place in the mill, where tonnage men can see the amount of product turned out each turn.

Sec. 33. Wherever practicable any mill, department or factory under the jurisdiction of this Association (boiling department excepted), desiring so to do, can,

upon agreement with the management, arrange to work on the eight hour system.

Sec. 34. Any member leaving a job to better his condition cannot claim his former job if he gets discharged or loses his new job on account of a shut down.

Flush Times in the Northwest.

The weather continues most propitious in the Northwest and the prospect of reaping by all odds the largest crops on record in that section of the United States grows brighter day by day. The amount of money that the wheat crop alone will pour into the States of Minnesota and the two Dakotas, if all goes well, will be prodigious. A carefully prepared and of course a conservative estimate on that crop in Minnesota and the two Dakotas this year by the secretary of the Minneapolis Chamber of Commerce puts it at 116,000,000 bushels. If the farmers throughout the three States shall realize an average of 75 cents per bushel for their wheat at the elevators they will be fortunate, and that will bring in \$86,000,000. The St. Paul *Pioneer Press* says a rough estimate of the farm products of the three States would be about as follows:

Wheat, bushels.....	116,000,000	\$86,000,000
Oats, bushels.....	150,000,000	30,000,000
Corn, bushels.....	60,000,000	18,000,000
Potatoes, bushels.....	16,000,000	3,000,000
Cultivated hay, tons.....	2,000,000	4,000,000
Wild hay, tons.....	3,000,000	3,000,000
Flaxseed, bushels.....	4,000,000	3,200,000
Butter, pounds.....	70,000,000	10,000,000
Cheese.....		1,200,000
Wool.....		800,000
Live stock.....		30,000,000
Miscellaneous.....		5,000,000
Total.....		\$194,200,000

Deducting "seed and feed," it is safe to say that the three Northwestern States named will net \$155,000,000 from the sale of their farm products this year. When to this are added the profits on the products of the mines, forests and commerce of that region, some idea may be gained of the material prosperity of the Northwest and of the uncommonly favorable conditions of the present year.

The iron monitor Miantonomoh, at the Brooklyn Navy Yard, will soon make her first cruise. For harbor defense she is claimed to be the first really formidable ship of the new navy. She was originally built of oak. She was 257 feet long, 53 feet broad, and drew 15 feet 4½ inches. Her armor, which was of iron, was bolted on over her hull. In 1872 she was rebuilt of iron, together with the Amphitrite, Terror and Monadnock, and placed in commission for a second time. In 1883 she was brought again to the Brooklyn Navy Yard, and has remained there ever since, nearly all the time in repair or alteration. The monitor has now 12½ inches of blended steel and iron on her sides and two Coles turrets, each holding two 10-inch modern rifles. Her length is 259½ feet and her beam 55½ feet. The enormous 10-inch rifles in her turrets throw solid steel projectiles weighing 500 pounds each with an effective fighting range of 7 miles and can hurl them 13 miles.

The sum of \$500,000 was appropriated by the New York State Legislature of 1889 to carry on industries in the several prisons. The industries selected are now in full operation. In order to get them going Auburn drew out of the appropriation but \$80,449, and now has on deposit \$27,000 more than was withdrawn. Sing Sing drew \$235,000 and Clinton \$184,000. The reason for Sing Sing's great draft is because the large industries carried on require greater capital.

The Belgian Mauser Magazine Rifle.

From "The Year's Naval Progress," issued by the United States Navy Department, we take the accompanying description of the Belgian magazine rifle.

This weapon, which has been adopted by Belgium, Turkey and the Argentine Republic, fulfills many of the requirements of a perfect magazine arm. Its advantages over the English rifle are too manifest to require comment. Unlike the German and Austrian Mannlichers, which can only be used as single loaders when their magazines are empty, this rifle can be so used at any time whether its magazine be full, partly full, or empty, in consequence of which it can be used either as a magazine arm or single loader at will. It will permit of a little greater rapidity

is turned and drawn to the rear, these locking lugs travel in corresponding grooves in the breech casing. The extractor *d*, Fig. 1, fits in a groove in the upper surface of the bolt. After firing, as the handle of the bolt is rotated, it moves to the rear slightly along an incline on the body, thus causing the extractor to withdraw the empty cartridge case nearly $\frac{1}{2}$ inch before the bolt is drawn to the rear.

Cartridge Ejector.

The empty cartridge case is drawn to the rear by the extractor until near the end of the bolt's travel, when the left side of its base takes against the nose *e*, Fig. 2, of the cartridge ejector *E*, which, with the continued motion of the bolt to the rear, results in smartly throwing the empty cartridge case out to the opposite side.

clearly seen in Fig. 1. The firing spring is noticeable in being unusually strong on account of the use of smokeless powders. The locking catch *h*, Fig. 1, is a short longitudinal plug with a cam at each end, which, by means of a thumb piece, can be turned so as to cause the front cam to take in a recess on the end of the bolt so as to keep it from turning, while the rear cam places itself in front of a nut on the end of the firing pin and holds it fast. An initial velocity of 1981 f. s. has been obtained with a chamber pressure of but 7.4 tons to the square inch. The twist of its rifling is one turn in 9.8 inches.

William Metcalf, the well-known Pittsburgh steel maker, in a discussion before the American Society of Civil Engineers

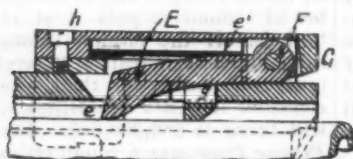


Fig. 2.—Cartridge Ejector.

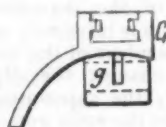


Fig. 3.—Bolt Stop.

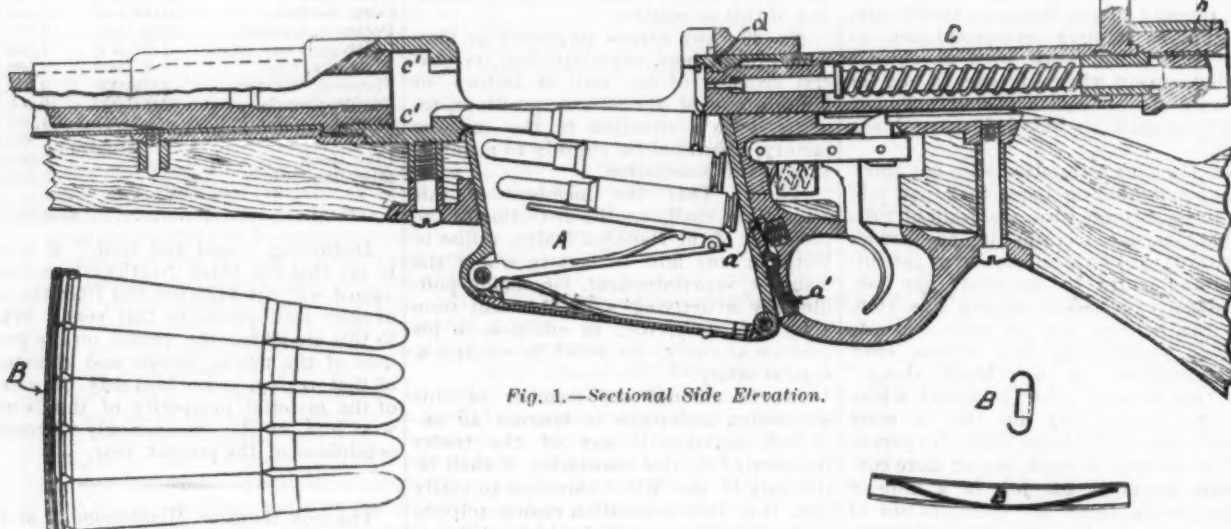


Fig. 1.—Sectional Side Elevation.

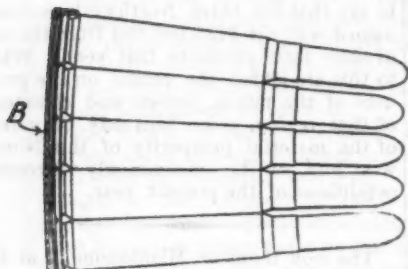


Fig. 4.—Charger.

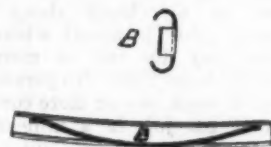


Fig. 5.—Spring Holding Cartridges.

THE BELGIAN MAUSER MAGAZINE RIFLE.

of fire, as its charger is not introduced into the magazine.

The magazine *A*, Fig. 1, is held in place by the spring catch *a*, and can be withdrawn from below when pressure upon the catch knob *a'* releases it from the spring catch. The cartridges, five in number, are contained in the charger *B*, Figs. 4, 5 and 6, and are loaded into the magazine from above. The charger is a metal frame with projecting flanges, Fig. 6, fitted to take in the grooves at the rear ends of the cartridges. Into these flanges the bases of the cartridges are pushed, and when in are pressed outward, and thus held by a spring, Fig. 5. A light pressure of the finger is sufficient to push the cartridges out of the charger into the magazine. It is not intended that the magazine shall be removed except for cleaning or repairs. Cartridges can be inserted in the magazine from the chargers, or one at a time by hand.

The bolt *C*, Fig. 1, is a hollow steel cylinder having a lever, *c*, at its rear end and two locking lugs on opposite sides of its front end. When the bolt is pressed home and turned through an arc of 90°, these lugs take in the recesses *e' e'*, Fig. 1, and lock the bolt. After firing, when the bolt

This ejector is pivoted to a lug, *F*, on the left side of the breech casing, and is pressed against the bolt by the spring *e'*, the bolt being recessed near its front end to permit the nose *e* to be pressed in sufficiently to take against the base of the empty cartridge case.

Bolt Stop.

On the lug *F* is also pivoted the bolt stop *G*, Figs. 2 and 3, which consists of an arm having a rib, *g*, projecting through an opening in the side of the breech casing, and fitting in the path of the left locking lug on the front end of the bolt in such a manner as to arrest the rearward movement of the bolt when the locking lug brings up against it. This bolt stop is in the form of a frame, which incloses the lug *F*, to which it is pivoted, by a vertical pin. The outer side of this frame is closed by a flat spring plate, *h*, secured to the outer end of the arm of the bolt stop, and pressing down at its front end on the rib *g*. By pulling the bolt stop up around its pivot the rib *g* will be withdrawn from the part of the locking lug, permitting the withdrawal of the entire bolt from its casing, all parts of which can then be taken apart with ease. The firing mechanism is

referred to some of the difficulties experienced by steel makers. As one illustration, take the section of a handy desk rule and paper cutter combined, which is much in use, and is made of thin steel. The center is bent to nearly a full circle, and from this the metal is bent sharply outward at each side so as to make the sides flare at about 120°. This is not a very difficult bend for unstrained metal to endure. It is made a little over 12 inches long, and is bent up from a strip of cold-rolled steel. No one who has not tried it can realize the difficulty there is in taking the finest and most ductile dead soft metal of not over 0.10 or up to 0.20 carbon, and rolling it barely enough to have a smooth surface, and yet have it endure that bend lengthwise of the bar. At the last we declined to make any cold-rolled steel to endure a double bend or a lengthwise bend except at a very high price, which was necessary to cover excessive cost.

Pennsylvania is agitated by a tremendous oil gusher at McDonald Station, yielding 10,000 barrels a day. A large oil refining company is reported to have offered \$2,000,000 for the property.

WORLD'S FAIR NOTES.

Progress of Construction.

The report of Chief of Construction D. H. Burnham for September was submitted to the Grounds and Buildings Committee last Friday. He says:

McArthur Bros. have moved up to date 1,028,105 cubic yards of earth. They have now employed four dredges, 274 men and about 200 teams.

The formation of a complete waterway around the island was effected September 25. The naval pier will be completed in about ten days.

Work has progressed satisfactorily in all the departments of the bureau, especially in the laying of water pipe and building of sewers.

During the month 759 cars of building material have been received.

All the contemplated changes on the buildings have been completed, except on the Administration Building. All plans have been furnished the contractors, and satisfactory work is being done on all the buildings.

The foundations of the Horticultural Buildings are in iron work, will soon be on hand and the rearing of the superstructure will begin in a few days. Work began on this building September 8 and 48 men are employed.

The foundations are being put in for the Fisheries Building. Work began September 28 and 30 men are employed.

On the Woman's Building, 53 carpenters are working, and the framework is so far completed that the exterior covering is being put on.

On the Mines Building, 134 carpenters and 28 iron men are at work. Three-fourths of the first story is up, and the two south trusses are raised.

The first floor columns are up for the Transportation Building, and 106 men are employed.

The flooring is being put on the foundations of the Electricity Building, and 85 men are at work.

Piles are being driven for the Administration, Agricultural and Manufactures Buildings.

Mines and Mining Exhibits.

The process of smelting aluminium, in which metal much interest has been awakened in the last few years, will be thoroughly shown at the World's Fair. The Cowles Company of Lockport, N. Y., and the Hartzfeld Furnace and Refining Company of Newport, Ky., have asked for space to show this process. The marble and granite operators near Rutland, Vt., are in communication with Chief Skiff. They are preparing to make a collective exhibit at the fair. A salt company of Cleveland wants space in which to make a big exhibit, and the salt mines of West Virginia will also make one. The State of Washington will make a special show of coal, and the State of Massachusetts, through its Board of World's Fair Managers, will make a special effort in the showing of granite.

The Elser mineral cabinets, formerly owned in Denver, have been sold to California parties and will be displayed at the World's Fair from that State. It is understood the price paid for these cabinets was \$25,000. The specimens forming the collection are altogether all the precious minerals—crystals and gems—and are all from the Pacific coast.

J. C. Carrera, superintendent of the Mineral Department of New Mexico's World's Fair Board, writes to Chief Skiff that he has recently finished a tour of the Territory, and that New Mexico will make a beautiful exhibit of rich minerals at the World's Fair.

James B. Cooper, superintendent of the Calumet and Hecla Copper Mines in the

Lake Superior country, has been appointed on the Michigan World's Fair Board and has been given the Department of Mines. He proposes to make the copper exhibit a memorable feature. The director of the Michigan Mining School at Houghton writes to the Mines Department that the school's cabinets of precious and economic minerals will be exhibited at the Fair.

Chief Skiff is in receipt of a letter from President Adams of Cornell University offering to the department contributions from the geological and mineralogical cabinets of the university.

Three well-drilling companies of St. Louis, Pittsburgh and Warren, Pa., have applied for space in the Mines Department. Each company proposes to erect complete apparatus for the drilling of oil wells. The Pittsburgh company have a handsome portable building, which was used for their exhibit at the Pittsburgh Exposition, and which was constructed with a view to being used at the World's Columbian Exposition. The Pittsburgh company propose also to show models of pumping and of flowing oil wells.

Transportation of Exhibits.

Passenger and freight transportation for visitors and exhibits at the fair have received a great deal of attention during the last week.

The move made by the representatives of the 20 lines having terminals in Chicago is taken to indicate that a passenger rate of one fare for the round trip will be eventually granted. At a conference between the representatives of the lines held last Thursday it was decided to form a Columbian Passenger Committee, which is to be a distinct organization, to have charge of passenger rates during the months the Fair is open in 1893. A committee was appointed to outline this permanent organization, and another to see the Exposition people and induce them to erect a joint ticket agency building on the grounds.

In the matter of freight transportation traffic manager Jaycox has prepared a schedule of rates governing the transportation of exhibits from the principal Eastern seaboard cities to Chicago in cents per 100 pounds, which cover the placing of exhibits on or adjacent to the space allotted to them.

Mr. Jaycox's official statement of the rates of transportation is as follows:

From	Class 1.	Class 2.	Class 3.	Class 4.	Class 5.	Class 6.
New York	89	73	58	45	36	33
Philadelphia.....	77	67	56	41	36	31
Baltimore.....	75	65	55	40	35	30
Boston	83	73	58	48	38	32
Portland, Me.....	73	65	52	39	34	30
Newport News	67	50	51	37	33	28
Montreal.....	73	65	52	39	34	30

The statement then continues: From the above it will be seen that freight rates from New York to Chicago, including switching and terminal charges, as specified above, vary from 1/4 cent to 1 1/4 cents per ton per mile.

When property is shipped on a through bill of lading to and from Chicago there will be no charge for transfer from steamer to rail at the seaboard.

The class rates herein quoted will, it is believed, cover such exhibits as are not of a particularly high grade.

Engines for Machinery Hall.

Chief Robinson has made an important decision in reference to the size of the engines which may be placed in Machinery Hall in the double relation of exhibit and power plant. Engines from 500 to 1000 horse power will be admitted to this competition. The original statement was that engines of 150 horse-power would be re-

ceived, but this has been changed. Chief Robinson has also a plan for increasing the exhibit space in Machinery Hall. He has asked that the engines in the main portion of the hall be placed in an annex on the south side of the building, and everything indicates that Chief Robinson will get what he wishes. He will save, he estimates, at least 96,050 square feet. He reports no room for such exhibits in the main structure.

Views of an English Commissioner.

Sir Henry Wood, before leaving Chicago last week to return to England, gave the representative of a foreign news agency the following interview regarding his investigations in Chicago, to be cabled to the London and other leading English papers:

"I consider the prospects for success of the exposition very favorable. It will be a great exposition, and our British manufacturers will make a great mistake if they fail to send here liberal and extensive exhibits. I think British art would be the most profitable exhibit that could be made. People here seem to know much more about the French and German schools of art than about the British. The people are becoming rich; they have plenty of money, and they are willing and ready to spend it to decorate their magnificent and costly houses. Fine art would be the best class of British productions to come to this fair.

"This exposition will touch the whole of the great West as well as Chicago, and there is a wonderful market for British goods. In this respect it is better for England to have the fair in Chicago than in New York. The situation of the fair is good and well adapted to the purpose, and there will be many novel features. The buildings are being erected on a magnificent scale; they are large and costly, and by far surpass anything at the Paris Exposition of 1889.

"Our coming as the first of the foreign Commissioners gave us a decided advantage. I think Great Britain ought and will occupy at the Columbian Exposition the same leading place it has held at all other expositions. The site selected by us and granted by the directory for the British headquarters is one of the best in the whole grounds. It is the choice spot. I am in hopes that our appropriation for the Government exhibit will be increased so that we will be able to make a worthy exhibit. The space in the buildings allowed for British manufacturers is complete. I think we will have a good Colonial exhibit as well.

"From all I can learn the customs and transportation arrangements will be all that could be wished. Goods for exhibition will be admitted under such favorable conditions as regards the customs that no one need fear on that account to prepare for an exhibit. The rates for transportation will be extremely low, and all goods sent back will be carried free on the homeward trip. The McKinley bill will not be allowed to militate against the success of the fair. Then, too, there are many lines of British manufactures which are not affected unfavorably by the McKinley bill. The McKinley bill may frighten foreign exhibitors, but it should not.

"I think the Exposition will afford a splendid opportunity for our British manufacturers to open a market here in the West for their products. It is like breaking new ground. No exhibitor need have any fear but that he will sell all his goods at a handsome price at the close of the fair, no matter how large the exhibit may be. These sales ought to lay the foundation of a great business with the West for England. The people here are rich and demand luxury, and are anxious to spend money to get it. I would advise extensive exhibits by the British in the line of

artistic industries—pictures, furniture, decorations, glass, pottery, and such. English nurserymen should take advantage of the great horticultural show that will be here. I think British live stock raisers would do well to send large exhibits to the live stock departments. All would be sold and a new market would be developed.

"I am informed by the United States Attorney General that the Alien Contract Labor law will not affect contracts made in England, and exhibitors need have no fear that artisans, clerks, or other help engaged in England for service at the fair can break their contracts on coming here."

May Bring Their Own Workmen.

Assistant Secretary Nettleton of the United States Treasury Department has addressed the following letter to Alexander D. Anderson, Special Commissioner of the World's Columbian Exposition, New York City:

In your recent communication addressed to the chief clerk of this department you ask, on behalf of the Consul-General of Great Britain, for a copy of the regulations of this department in regard to contract labor to be employed in connection with foreign exhibits at the approaching exposition. While no formal regulations have been promulgated by the department in this direction, you are authorized to assure the Consul-General of Great Britain and all others with whom you may have occasion to communicate in this connection, that alien laborers, mechanics or experts in the employ of foreign exhibitors, and coming to the United States in connection with foreign exhibits at the World's Columbian Exposition, shall be freely admitted and will be subjected to no delay or hindrance of any nature. Whatever regulations shall prove to be necessary in order to carry out this decision of the department will be formulated in due season and furnished to all interested parties through the proper channels.

Bids for the Art Palace Opened.

The Construction Department is figuring upon making the Exposition Art Palace a permanent structure. Unless the present plans are changed there will be stone foundations under the building. The bids for the construction of the Art Palace were opened last week, and for the masonry work the lowest bidder was John Griffiths, for \$149,700. The Art Palace is designed to be the finest structure on the exposition grounds, and if the South Park Commissioners see fit to retain it after the fair for a music hall or any other purpose, the cost of constructing it will be taken in part payment of whatever may be due from the exposition to the Park Commissioners.

The idea is that the substructure shall be of stone and the superstructure covered with staff, as will be the case with the remaining buildings, but with solid foundations the framework can be altered after the fair to suit the wishes of the commissioners. The lowest bidders for the remainder of the work of constructing the building were as follows: Carpentry work, Steinmetz & Eilenberger, \$68,743; exterior covering, Phillipson Decorative Company, \$112,501; painting and glazing, the W. H. Stubbings Company, \$12,569; structural iron work, A. Gottlieb, \$51,400; marble mosaic, Bagley & Mason, \$22,213; galvanized iron work, W. B. White, \$46,465.

According to these bids the approximate cost of the building will be \$473,590. This, however, does not include plumbing and a great deal of interior work, so that in round numbers the Art Palace will cost \$500,000.

An interesting development of the week has been the completion of the calculation for lighting the galleries of fine arts, a system which will necessitate the employ-

ment of certainly not less than 15,000 incandescent jets. Hitherto in the application of electric lighting no building has been equipped with possibly more than 10,000 incandescent lights, and the system determined upon for the illumination of the art galleries of the World's Columbian Exposition is undoubtedly the most extensive plan of illumination by electric light yet attempted in any structure in the world.

Space Allotted to Great Britain, Germany and Denmark.

Before the foreign commissioners left for the East last week they were formally allotted by Director-General Davis the following amounts of space in the several great buildings:

To Great Britain and all its dependencies:	Square feet.
The Manufactures, or Industrial Building, not including Canada.....	120,000
Machinery Hall.....	40,000
Electricity Building.....	20,000
Fine-Arts Hall.....	20,000
Mines and Mining Building, including Canada.....	25,000
Agricultural Building, including Canada.....	20,000
Fifteen thousand square feet was also reserved in the Agricultural Building and reasonable space in the Horticultural, Fish and Fisheries and Transportation Buildings.	
Germany's allotment:	Square feet.
Manufactures Building.....	100,000
Machinery Hall.....	40,000
Agricultural Building.....	15,000
Mines and Mining Building.....	10,000
Fine-Arts Building.....	20,000
Electricity Building.....	20,000
Similar reservations were made in the other buildings, as in the case of England.	
Denmark:	Square feet.
Manufactures Building.....	12,000
Fine-Arts Building.....	6,000
Agricultural Building.....	20,000

The total amount of space granted and reserved in the various buildings reaches 12 acres. England gets 6, Germany 5 and Denmark 1. Germany, in addition, gets 4 acres in the Midway Plaisance for a German village, which is to be a \$500,000 affair.

Brevities.

On Wednesday Supervising Architect Edbrooke of the Treasury Department opened bids for the construction of the Government Building. J. F. Rees of Chicago was the lowest bidder for the work, his estimate being \$338,669 for the entire job. This bid lets the Government people out of a hole. They have \$400,000 for the construction of the building, and according to the present plans about \$60,000 of this amount will be saved. There is to be no change in the appearance or design of the building. Cheapness has been effected by the substitution of wood where it was formerly intended to use iron.

The people of Chicago and America will be surprised when the wonderful and extensive exhibits at the famous electrical exposition at Frankfort-on-the-Maine are reproduced at the Columbian Exposition. This electrical exposition is the wonder of Europe, attracting thousands of strangers from distant nations. Nearly all the exhibits in the line of electrical science and progress will be transferred to Chicago in 1893. The exhibitors seem to be glad of the opportunity presented to them to show their achievements to the American people.

The force of men employed on the buildings was largely increased last week. The work of construction is being most vigorously pushed.

The aggregate yield of the new cotton crop cannot thus far be estimated with any degree of accuracy on account of the conflict of evidence among those who are supposed to be best informed.

Trade Publications.

THE GOUBERT MFG. COMPANY of 32 Cortlandt street, New York, have issued a catalogue descriptive of their water-tube feed-water heater. This apparatus consists of two cast-iron water chambers connected together by a cluster of seamless drawn brass tubes rigidly secured at their ends to the tube plates by means of a roller tube expander in the same way that boiler tubes are secured to the heads. The lower water chamber rests on legs on the floor, while the upper water chamber is free to move vertically as the tubes expand or contract. The tubes are surrounded by a cast-iron shell provided with inlet and outlet nozzles, to which are connected the exhaust pipes. This shell is bolted to the lower water chamber, but is free to expand independently of the tubes, its only connection at the top with the upper tube plate being made by means of a flexible corrugated copper gasket. This only serves to close up the space between the upper tube plate and the shell, and has no pressure to withstand but that of the exhaust steam, although it is protected and backed up in such manner as to easily resist any pressure that may come upon it. This copper gasket is faced on each side by asbestos gaskets which protect it against wear and serve also to make a tight joint without crushing the corrugations. At the extremes of temperature this corrugated copper expansion joint never has to spring more than 3/64 inch either way, and is practically indestructible. The water inlet and outlet pipes are made to project inside of the water chambers, and opposite them are placed dish-shaped deflectors, the purpose of which is to deflect the current and thereby promote the separation of scum and sediment. Suitable surface and mud blows and also a hand hole are provided for cleaning. The exhaust steam from the engine is admitted to the shell through the nozzle on one side, and, spreading between the tubes, impinges upon them on its passage across to the outlet on the opposite side, the water of condensation being removed by the drip pipe, which is kept always open. The cold water may also be admitted at either top or bottom of the heater, passing out at the opposite end; but for bad waters it is recommended feeding in at the top.

THE ROLLASON GAS ENGINE is fully described in a pamphlet published by the builders, the Electric Mfg. and Gas Engine Company of 134 Liberty street, New York. As these engines were recently described in *The Iron Age*, it is not necessary to repeat. They are made in the following styles and sizes: Vertical, 1 and 2 indicated horse-power; slide valve horizontal, 4, 8 and 12 indicated horse-power; Premier horizontal, 6, 8, 12 and 16 indicated horse-power.

THE E. J. MANVILLE MACHINE COMPANY of Waterbury, Conn., have presented an illustrated catalogue descriptive of their power presses and wire-working machines. The latter take the wire direct from the reel and form it automatically in any desired shape for which the machine is designed. These machines have been long and well known and their product extensively used. We notice an illustrated description of a double-action crank press, in which the blanking slide is made in box form and is operated by one connection, which is in the center, dispensing with the double connection and adjustment that many times are a source of annoyance, produced by the cramping of the slide and the shearing of the punches. The drawing is done by the two outside connections, which are connected to the shaft as in other presses, but have double the bearing surface, the lower end being fitted to a yoke which reciprocates in the center of the cutting slide and is held in place by means of caps, and through which an adjusting punch holder is fitted to receive the punch in the usual manner for cutting and drawing shallow shells. Another press is designed on the same principle, but in lieu of the crank a cam arrangement is used for cutting and drawing deep shells.

WE HAVE RECEIVED from the Stratton Separator Company, 32 Cortlandt street, New York, a pamphlet designed to emphasize the necessity of employing dry steam in order to obtain the maximum of economy, efficiency and safety. The pamphlet gives an exposition of the various methods of obtaining it and dwells particularly upon the superior advantages of the Stratton system of mechanical separation.

Crane Weighing Beam.

A crane beam particularly designed for foundry use in weighing heavy castings has been placed on the market by the Forsyth Scale Company of Youngstown, Ohio.

The construction of weighing apparatus adapted for use with loads of any considerable weight necessitates the employment of what are known as multiplying beams—that is to say, lever beams having comparatively short resistance arms and long weight arms—in order to enable small and light weights to be used for balancing heavy loads or resistances. It will be obvious that the closer the fulcrum of the beam is placed to the pivot on which the load or resistance is suspended the greater will be the multiplication of the gravity of the weight which will be effected by the beam. The reduction of distance between the beam fulcrum and the resistance pivot being, in the ordinary construction, limited by the thickness of the suspending members of the beam and of the load, respect-

beam on each side of the slot. The load pivot 6, which constitutes the central portion of the pivot block, is provided with a knife edge on its top, which serves as a bearing for a hanger, from which the load to be weighed is suspended. The fulcrum pivots 5, which project from the pivot block at each side of the beam, are knife edged on their lower sides in line with the knife edge of the load pivot and bear in the eyes of the clevis.

The fulcrum pivots and resistance pivot are, by the construction above described, located in different longitudinal vertical planes as well as in different transverse vertical planes. The hangers or suspending members on which the fulcrum pivots are carried and which the load pivot carries, respectively, are consequently also located in different longitudinal vertical planes, and therefore may overlap longitudinally to any extent due to the longitudinal proximity of the central planes of the pivots. It will thus be seen that no limit is imposed upon the location of the central planes, and that, therefore, they

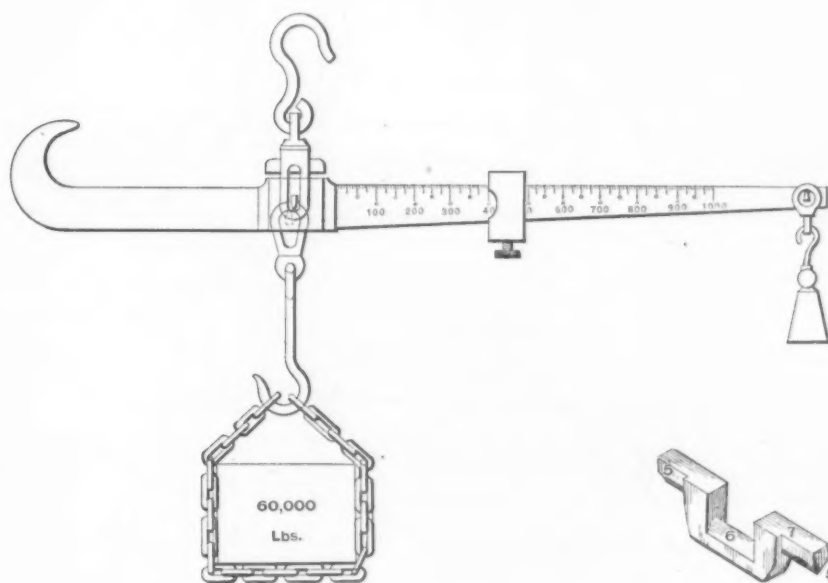


Fig. 1.

Fig. 2.

CRANE WEIGHING BEAM.

ively, the employment of additional levers and pivots becomes necessary where an increase of multiplying effect above that due to the minimum distance attainable is required, thereby involving a corresponding complication of structure and increase in cost and liability to derangement. In the scale we here illustrate, the construction is such that the distance between the beam fulcrum and the resistance pivot can be reduced to any required degree, thereby increasing the power of the weight and reducing the length of the beam. The weighing beam is of the usual form and is suspended from a suitable support by a shaped hanger having an eye in each of its arms. A vertical slot is formed in the beam for the reception of a pivot and suspending hanger which carry the load to be weighed, the width of the slot being such as may be necessary to accommodate a hanger of the proper length. The fulcrum pivots 5, Fig. 2, and the load pivots 6, are knife-edge bearings, with their edges located in the same horizontal plane, and in order that their vertical central planes (the distance between which is the length of the load or resistance arm of the beam) may be located as closely together as desired these pivots are made in a single piece, being formed upon a pivot block, 7, which passes through the slot in the beam and is fixed firmly in the metal of the

may be located at an infinitesimally small distance apart, thus correspondingly increasing the leverage or multiplying action of the beam proportionately to any determined length of its longer or weight arm, or enabling a proportionate reduction of length of the weight arm to be made for a determined multiplication, as the case may be. The weight arm of the beam is marked with numbered division lines for indicating the weight of the load and is provided with a sliding balance weight in the usual manner.

It is evident that there is no limit to the capacity of a weighing beam of this description. The Forsyth Scale Company are just completing a 60,000-pound foundry scale having 1000 pounds by 5 pounds on the beam.

At the dry dock in the Charlestown Navy Yard Thomas H. Mirkil, Jr., of the Southwark Foundry and Machine Company of Philadelphia, who have just furnished some new pumping machinery, has completed some satisfactory tests of the pumps before a board of experts appointed by the Secretary of the Navy. The mammoth dock, with more than 6,000,000 gallons of water, was emptied within one hour and 50 minutes, 40 minutes less than the time called for by the contract. This pumping machinery is the most

powerful with one exception in the country. It consists of four 100 horse-power boilers and two 27-inch centrifugal pumps, drawing directly from two vertical pumps with cylinders 18 inches in diameter.

The Iron and Steel Institute.

The autumn meeting of the Iron and Steel Institute will be held on October 6 and 7, the first day's session at the Literary Institute, Royal Arsenal, Woolwich, and the second day's meeting in London. A number of prominent manufacturing establishments will be open for inspection, and the annual dinner of the institute will take place at the Hotel Metropole. The following list of papers will be presented:

- The Constitution of the Royal Ordnance Factories. By W. Anderson, D.C.L., F.R.S., Director-General of Ordnance Factories.
- The Measuring Instruments used in the Proof of Guns and Ammunition at the Royal Arsenal, Woolwich. By Captain Holden, R.A., Proof Officer, Woolwich.
- The Manufacture of Continuous Sheets of Malleable Iron and Steel direct from Fluid Metal. By Sir Henry Bessemer, F.R.S.
- Illustrations of Progress in Material for Shipbuilding and Engineering in the Royal Naval Exhibition. By W. H. White, C.B., Chief Constructor.
- The Forging Press. By W. D. Allen, Sheffield.
- The Elimination of Sulphur from Pig Iron. By J. Massenez, Hoerde, Germany.
- An Undescribed Phenomenon in the Fusion of Mild Steel. By F. J. R. Carulla, Derby.
- The Siemens-Martin Process in Austria. By Paul Kupelwieser, Witkowitz, Austria.
- The Adams Direct Process in the United States. By J. D. Weeks, Pittsburgh.
- The Calorific Efficiency of the Puddling Furnace. By Major Cubillo, Trubia, Spain.

American Armor Plates.

Arrangements are now being made for a test during this month at the naval ordnance proving ground at Indian Head of eight American-made armor plates. In the coming test at Indian Head the work of two firms—Carnegie, Phipps & Co. and the Bethlehem Iron Works—will be represented. Some of the plates will be of all steel and others of nickel steel. Some of them will be treated by the Harvey process of surface hardening, and others will not, so that the trial will not only show the relative value of all steel and nickel steel as a material for armor plates, but will also demonstrate the value of the Harvey process. It will also afford an opportunity for comparison between rolled and forged plates, as Carnegie, Phipps & Co. use the former process, while at Bethlehem the metal is forged.

The plates will be of the same dimensions as those tested at Annapolis last year—8 feet high, 6 feet wide and 10½ inches thick. Five shots will be fired at each plate—four from a 6-inch gun and one from an 8-inch gun. The 6 inch gun used will be one of the new 40-caliber guns intended for Cruiser No. 12. The 8-inch gun will be 35 calibers long. Brown prismatic powder and Holtzer armor-piercing projectiles will be used, those for the 6-inch gun weighing 100 pounds each and those for the 8-inch gun 250 pounds each. The striking velocity of the 6-inch projectiles will be 2100 feet per second, or 25 feet per second more than in the Annapolis trial. This makes the trial somewhat more severe than that at Annapolis, and this fact will have to be borne in mind in making comparisons between the two. It is expected that the first plates will be fired at about October 15. As there are so many plates to be fired at, about three days will be required to finish the trial, and intervals of about five days will be required for fixing the targets in position, so that the trial will not be finished until near the end of the month.

The Victoria Torpedo.

This torpedo is the invention of G. R. Murphy, and though not adopted by any government it has attracted much attention abroad. The following description we take from the "Year's Naval Progress," published by the Navy Department: The coast-defense type of this torpedo is similar in form to the auto-mobile torpedo now in general use, and is divided up into six compartments, as shown in Fig. 1. The forward compartment contains the explosive charge, which is compactly stowed in the lower part, the upper part being divided into five compartments, four vacant and intended to contain water, the fifth, D, containing Holmes' light composition. Attached to the forward bulkhead of the air chamber is a diaphragm, B, so connected to the piston rod of a piston valve, C, moving vertically in the cylinder A as to cause the piston to gradually descend in its cylinder as the air pressure decreases in the compressed-air chamber, allowing water to flow in through the thus opened top of the cylinder A to successively fill each of the four

along a rod connecting it to a fuse in the nose of the torpedo to fire the charge (unless caught in a net or boom protection the fuse is intended to act by percussion), but with a reverse current it will serve to actuate, by means of a rod and gearing, a horizontal rudder to bring the torpedo to the surface of the water. The rear motor serves to actuate the vertical steering rudders.

When the torpedo is first discharged the cable will be paid out from shore, that reeled up in the torpedo being held by a grip, which at any time, by means of a cord and spring, can be released by opening the air valve to its full limit, thus permitting cable to be paid out from the torpedo. The fin is shown in the figure, and this torpedo can be used with or without a float. The two propellers are right and left handed, similar to those of the Whitehead. Mr. Murphy's intention is to so arrange that this torpedo can also be launched from fixed under water positions in harbor, a mile or more from shore. For this purpose the torpedo, with an accompanying buoy, is held by four locked arms in a

passing trains. All the holes for a joint can be drilled without moving the frame. The tool is made with a double ratchet, so that it drills continuously by both the forward and backward movement of the handle, hence it accomplishes double the work of single acting drills in the same time. The manufacturers are now adapting this drill to general shop work by adding an automatic feed, and expect to have the new tool ready for the market in a short time.

The United States Rolling Stock Company.

There is a war over the property of the United States Rolling Stock Company, which some months ago went into the hands of a receiver, and last week one of the English holders of an interest in the property filed a bill in the United States Circuit Court at Chicago to foreclose a mortgage given by the company. He also asks that the entire plant of the company be sold for the benefit of the holders of 5

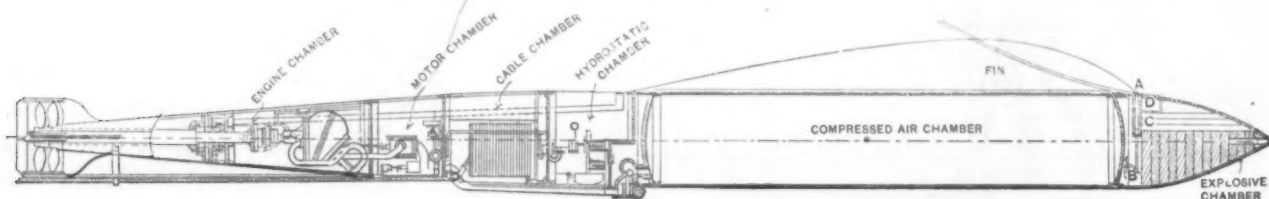


Fig. 1.—Coast Defense Torpedo.

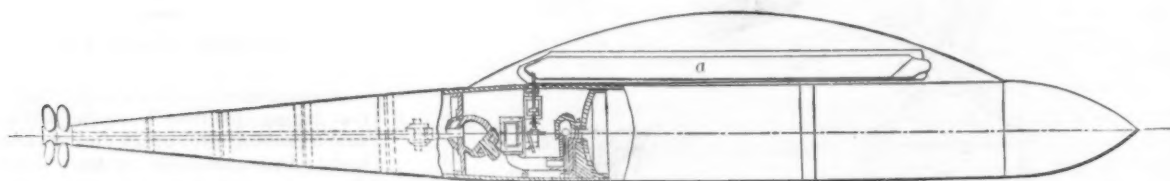


Fig. 2.—Naval Torpedo.

THE VICTORIA CONTROLLABLE TORPEDO.

compartments mentioned above, in this manner adding weight forward to compensate for the loss of the expended air.

The compressed-air chamber is connected with the engine by means of an admission pipe as shown, this pipe being fitted with a valve operated by one of three motors in the motor chamber. To the rear of the compressed-air chamber is that for the hydrostatic valve, which, with its pendulum and servo-motor, actuates a horizontal rudder to keep the torpedo at a set depth when running. In the rear of this is the electrical cable chamber. The torpedo is controlled from the firing station on shore through the medium of a flexible gutta-percha cable of a specific gravity not varying much from that of sea water, of which about 1200 yards are coiled in this chamber, the remainder being coiled up at the firing station ready for unreeling. This cable contains three sets of separately insulated copper wires, by means of which the power necessary for controlling, steering, raising to the surface and firing the torpedo is transmitted from suitable electrical batteries at the firing station to three magneto electric motors placed in the next chamber to the rear. Of these motors the forward one is used to actuate the spindle of the compressed air valve and regulate the admission of compressed air to the spherical air engine in the after chamber. The second motor has two functions. With a direct current it acts

cage moored at the bottom. The buoy contains a coil of electric cable, and the cage is connected with the firing station on shore by a cable containing five strands of copper wire, three of them for the operations described above; a fourth to cause the setting free of the torpedo and buoy, and the fifth, which is connected with electric cells, to cause the ringing of a bell at the firing station in case of accident to the torpedo or its cable. To operate the torpedo from such a position it is released from its cage and then started off, pulling cable out of its buoy instead of from the shore, as in the case given above.

Mr. Murphy has also designed the naval torpedo shown in Fig. 2, in which, instead of the hydrostatic valve used in the shore torpedo, he will use a dorsal fin, in which will be secured a float, *a*, which, through a dash pot and servo-motor, will operate a side fin to keep the torpedo about 2 feet under water. Initial trials of this torpedo are expected to take place soon.

Avery & West, 450 Rookery Building, Chicago, have been appointed sole Western agents for the sale of the ratchet drills made by the Schuttler Mfg. Company. These drills are intended for use in drilling holes in rails in place in the track. They are arranged with a frame which is easily adjusted to either the inside or the outside of the rail, and while in a working position causes no obstruction to

per cent. debenture bonds issued to the amount of \$2,500,000.

The complainant in the suit is William Brander of London, England. He recites that on June 26, 1889, the United States Rolling Stock Company, in order to provide money to pay off or retire their 6 per cent. debentures issued January 11, 1883, to the amount of \$1,000,000, and also of an issue of first mortgage bonds to the amount of \$250,000, decided to issue consolidated first mortgage 5 per cent. debentures to the amount of £500,000 bearing date of July, 1889, and payable in 1919. A trust deed or mortgage securing these securities was given to the Central Trust Company of New York as trustees. Debentures to the amount of \$1,000,000 were sold, and these are now valid obligations of the company. It is charged that none of the first mortgage bonds have ever been presented to or received by the trustees in exchange for the consolidated first mortgage bonds or for the payment or retirement of them, and that the remainder of the 2500 debentures of the 5000 that were authorized have not been certified to or delivered by the trustees.

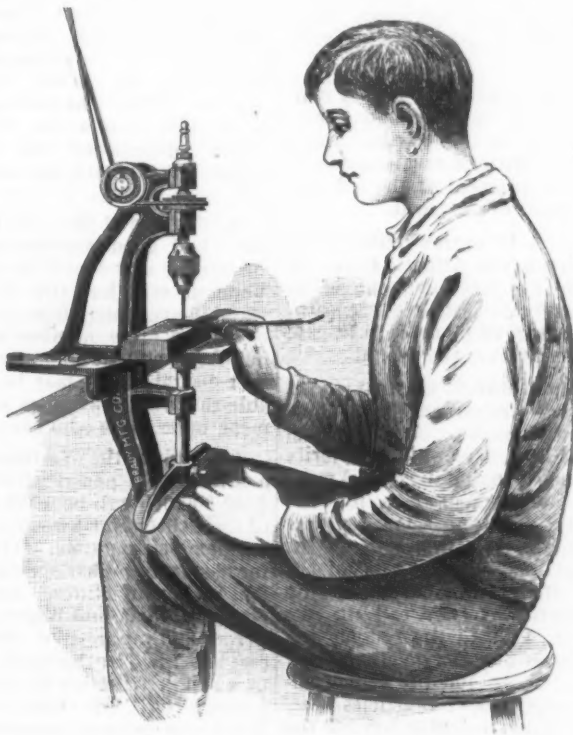
The interest on the consolidated mortgage bonds also, it is alleged, has not been paid, the company's agent in London defaulting in the payment of the semi-annual interest to the amount of over £6000. In view of all these facts it is alleged that the complainant's interests will be jeopardized unless a receiver be ap-

pointed. Mr. Brander also asks in view of the above facts, the company's property being so entailed, that a receiver be appointed and all the property sold for the benefit of the holders of the consolidated first mortgage bonds. There being much of the old issue of securities outstanding the court is asked upon a final hearing to enjoin the holders of the old issue of securities of 1883 from interfering with the foreclosure proceedings now begun. Out of the proceeds of the sale of the company's property Brander asks that he be paid the amount of his investment together with all the costs of the present suit.

Judge Blodgett appointed Adolph Hegewisch receiver of the last issue of securities. Mr. Hegewisch is also the receiver of the company's property at present, having been appointed to the position when

handle the work, and at the same time permits a great degree of sensitiveness, since the resistance can be felt by the knees and the upward pressure regulated accordingly. It is stated that at least 50 per cent. more can be accomplished by this drill in a given time than with any other owing to the rapidity with which the work can be adjusted and then performed.

August Belmont & Co. of New York and Lee, Higginson & Co. of Boston will receive subscriptions at par for \$3,000,000 7 per cent. cumulative preferred stock of the Westinghouse Electric and Mfg. Company. The authorized capital stock of the company is \$10,000,000, of which \$4,000,000 is preferred stock. The balance, \$1,000,000, of the preferred stock above the amount offered now for subscription



SENSITIVE KNEE DRILL.

the president, Cyrus D. Roys, applied to have a receiver appointed.

Sensitive Knee Drill.

The engraving represents a sensitive knee drill of new design, made by the Brady Mfg. Company of York and Washington streets, Brooklyn, N. Y. The method of operating the drill spindle is clearly indicated in the drawing. The belt is held to the grooved pulley on the spindle by means of two idlers mounted on top of the frame. Means for taking up the wear of the spindle are provided. Through the outer end of an arm projecting from about the center of the frame is a shaft which is free to move up and down vertically. Adjustably secured to the lower end of this shaft by means of a set screw is a knee plate, the lower surface of which is so curved as to fit upon the knees of the operator. The upper end of the shaft carries a table accurately placed at right angles to the drill spindle and upon which rests the work to be drilled. The work having been placed upon this table or upon a block resting upon it, as shown in the engraving, the piece to be drilled is then held by the operator and the table raised by means of the knees to feed the work to the drill. This construction leaves both hands of the operator at liberty to

will remain in the treasury to meet the future requirements of the business. The Westinghouse Electric and Mfg. Company record a constant growth of the sales, which in 1890 show a total of \$4,289,086.81, which amount will be much increased by the general introduction of electric lighting and other features of their manufacturing specialties, opening to the company a field of much greater magnitude in the present and near future for which the additional capital of the new company will be available. The company will continue to have the benefit of the mechanical and engineering ability of its founder, Mr. Westinghouse, while among the directors there are many names of high financial standing known for their conservatism and prudence. The subscription for the entire amount of the preferred stock now offered has been guaranteed by underwriters in this country. The subscription lists will be opened in New York and Boston on Wednesday, October 14, and will be closed at 3 p.m. on Friday, October 16.

The fall meeting of the Alabama Industrial and Scientific Society will be held in Birmingham, Ala., on October 14. Coke, its manufacture and use, will be the principal subject discussed, and the following papers will be presented: "The Thomas

Coking Oven," by J. T. Hill, manager of the coal mines at Coalburg; "Going into Blast with a Coke Furnace," by Jno. S. Kennedy, late superintendent of the Ensley furnaces, and "The Ultimate Composition of Some Alabama Cokes," by Wm. B. Phillips, Professor of Chemistry and Metallurgy.

Treasury Decisions.

DUTY ON SCALES OR CINDERS OF IRON.

In a letter to J. E. Atkins, Meriden, Conn., dated August 24, 1891, the Assistant Secretary holds: The Department is in receipt of your letter of the 30th ult., in which you request to be informed as to the duty which would accrue upon importations into the United States of scales or cinders that fall from iron while being rolled, or that accumulate about the blacksmith's anvil from the forging iron.

Under date of June 16 last, you are informed that if upon an importation of such merchandise you should be dissatisfied with the classification made by the Collector, your remedy would be by protest in the manner prescribed by Section 14 of the act of June 10, 1890.

This matter has been the subject of correspondence, and the Collector of Customs at Boston forwards a report from the appraiser at that port, in which, for reasons stated, he expresses the opinion that said article would be liable to duty at the rate of 10 per cent. ad valorem either as a waste under Paragraph 472 of the tariff of 1890, or under Section 4 of the same act, as a raw unmanufactured article not specially enumerated or provided for.

DRAWBACK ON ARTICLES MANUFACTURED FROM LEAD.

The following is the text of a letter written to the Balbach Smelting and Refining Company of Newark, N. J.:

In reply to your letter of the 14th inst., the Department has to inform you that articles manufactured elsewhere from lead produced in a bonded smelting warehouse from imported ore, upon which duty has been paid on the withdrawal of such lead, under the provisions of Section 24 of the act of October 1, 1890, and Paragraph 4 of the regulations prescribed thereunder (Synopsis 10,585), will be entitled, on exportation, to drawback, under Section 25 of said act.

One year ago Howe, Brown & Co., Limited, opened a steel warehouse in Chicago at 228 Lake street, under their own name, with Edwin S. Jackman as manager. Their rapid strides toward the leading position in the Western market during this short period have occasioned much favorable comment among the trade. One railroad after another has adopted their special tool steel, and their machine shop trade has grown so fast as to compel them to greatly increase their stock. It would seem that this old firm (formerly well known to the railroads and manufacturing concerns as Hussey, Howe & Co., Limited), had only to enter the Chicago market and announce that fact and prosperity and success was assured from the start. They have almost abandoned the open-hearth business, and are now paying special attention to the manufacture of fine cast steel for tools. During the recent long depression throughout the country no signs of dullness could be noticed at their Lake street store, where it was constant activity and rush. Howe, Brown & Co., Limited, may justly claim to have been the first steel concern in the United States to make crucible steel successfully, and it is evident they are unwilling to occupy second place now. The quality of their material and their broad-gauge business methods are, to those who know James W. Brown, the chairman, but the reflection of his ideas and policy.

THE WEEK.

The Argentine crisis results in a falling off in foreign trade, due to an enforced economy, also to a decline in home industry. This is shown by the lessened imports of commodities used in domestic manufactures. For example, during the half year ended June 30 imports of iron were reduced one-half, compared with the same period in 1890. The number of plows imported fell from 24,500 to 9700, and spades from 210,000 to 106,000. Increased imports of wire to the amount of 9600 tons make a favorable exception, indicating the reclamation of neglected land. The decrease of exports was not so marked. The customs revenue of Argentina for the half year was equal to \$6,000,000 in gold, which hardly sustains the estimate of \$26,650,000 for 1892 in the budget of Minister Lopez.

The Alpine Iron Works, in Austria, have built a local railway from Eisenerz to Vordernberg, in Northern Styria, for the transport of the iron ore, which comes from almost inexhaustible Eisenerzberg. It is expected that the new railway will take 1,000,000 tons of iron ore to the works every year. The railway is 12 English miles long.

There has been so much talk during the last few years about our public lands being exhausted that it will be a matter of surprise to many to learn from the report of Commissioner of Public Lands Carter that we have yet 579,664,683 acres still unoccupied. Of this, however, there is a large acreage not available for profitable settlement, and, in fact, according to the commissioner, "very little desirable public land remains unappropriated outside of the boundaries of what may be termed the arid region." There are, however, 120,000,000 acres which can be reclaimed through a system of storage reservoirs for purposes of irrigation. The operations of the land office during the last fiscal year show a total area of public entries and selections of 10,357,231 acres. Of these 2,143,090 acres were sold for cash, 5,040,393 were homesteaded, and 969,066 were entered under the timber culture law. In view of what remains this seems a small amount to be disposed of in a year, but it indicates that we have reached a point where rich prizes for the pioneer settler are few.

The accession of the Australasian Colonies to the Universal Postal Union went into effect 1st inst., and letters can hereafter be sent to New South Wales, Victoria, Queensland, West Australia, South Australia, Tasmania, New Zealand, British New Guinea and the Fiji Islands at the rate of 5 cents per $\frac{1}{4}$ ounce or fraction thereof.

The last Indian census shows that in the past ten years the natural growth of India's population has been 27,500,000. The population now numbers 286,000,000. India contains more people than all Europe, exclusive of Russia.

Russia this year has 25,000,000 delinquent taxpayers, and her budget will shrink \$60,000,000.

The superintendent of the New York State Banking Department, after a comprehensive investigation, has decided that several mortgage companies, which received their licenses last year, must not transact business in this State any longer. Here are the companies named in the order: American Investment Company, Emmetsburg, Iowa; Globe Investment Company, Boston, Mass.; Husted Investment Company, Kansas City, Kan.; Kansas City Investment Company, Kansas City, Mo.; Lewis Investment Company, Des Moines, Iowa; Mead Bond and Trust

Company, Denver, Col.; Nebraska Loan and Banking Company, McCook, Neb.; Union Debenture Company, Minneapolis, Minn.; Western Investment Company, Lemars, Iowa; Western Loan and Investment Company, Hastings, Neb.; Winner Investment Company, Kansas City, Mo.

A new line of steamships between New York and Brazil is proposed, and plans are said to have been already perfected. Only Brazilian capital is interested in the project. Dr. Nominato José de Sousa Lima, president of the Bank of Concession and Discounts of Rio Janeiro, Brazil, and also president of one of the largest stock companies engaged in the shipment of coffee and other Brazilian products to New York, is credited with being at the head of the enterprise. The scheme includes five first-class iron steamers of 4000 tons each, to be built in this country. A local Brazilian paper, *A. H. de Paula Coelho*, advertises for bids, and says one object of the line is to encourage direct trade with the United States rather than England.

Encouraged by a favorable money market, the Chicago, Rock Island and Pacific Railroad Company are said to contemplate the issue of about \$10,000,000 in bonds, to be used for the equipment of the old road and about 90 miles of new road.

Bolivia expects to open a route for her commerce direct to the Atlantic Ocean by way of the Amazon river and one of its tributaries, which has just been explored, and building a railroad 60 miles in length, to connect with La Paz, the capital.

Japanese manufacturers are making an earnest effort to encourage direct trade with the United States. A letter from Tokio, September 1, says: "The majority of Japanese goods bought by the American purchaser are procured as follows: The manufacturer sells to some Japanese commission house, this firm sells to the American commission dealer in one of the treaty ports. He sells to some commission house in America. They sell to the wholesaler. He sells to the retailer and the ultimate buyer gets the goods plus (in most instances) 50 to 100 per cent. commission. Naturally, superior articles, costing an honest figure, would be beyond the price of even the liberal American purses when increased at this rate."

The steamer Albatross is now about to undertake the task of surveying a route for a submarine cable between San Francisco and Honolulu, for which the last Congress appropriated \$25,000.

Vancouver, B. C., now has a population of 14,000, and the assessed valuation is \$12,000,000. Negotiations are now going on with an English syndicate for the construction of a wharfage and dry dock system and a shipbuilding plant which will, when carried out, be the largest on the Pacific Coast.

The speculative world has been much affected by the reported physical prostration of Jay Gould, which seems to have been no more serious than a strong ebullition of feeling caused by a discussion with Russell Sage respecting the declaration of a dividend on Missouri Pacific. Mr. Gould afterward attended an agricultural fair and in the evening went to the theater.

The proprietors of the Cunard Ocean Steamship line do not mean to be surpassed by any of their rivals. The two new vessels under contract will be of enormous size and equipped with engines possessing a power proportioned to the bulk of the ship, while the absence of spars and heavy rigging indicates steam is the sole dependence for motive power. In consequence of the peculiar arrangement of the boilers the funnels will be widely separated, one being close behind the fore-

mast and the other just forward of the second mast. Bids for the shafting and engines have been asked for. The new boats will be 14,000 tons each and will be 600 feet long by 65 feet beam, with twin screws. The Teutonic is 556 feet long by 57 $\frac{1}{2}$ feet beam. They will be driven by engines of the most recent type up to 30,000 horse power, while the Teutonic's are of 20,000 horse power. Though the ships are not absolutely guaranteed to be five-day boats, they are guaranteed to average 21 knots an hour in the open sea. This will be their speed for average trips, but if pushed for a record trip they will be able to do considerably more than 21 knots an hour.

The Newfoundland Blue Book for 1890 shows that both imports and exports decreased. The total value of imports was \$6,568,000, as against \$6,607,000 for 1889. Imports from the United States meanwhile dropped to \$1,247,000, as compared with \$1,615,000 for the previous year, but with Canada trade increased. Exports were likewise unsatisfactory, the total value being \$6,099,000, or \$23,000 less than for 1890. The decline is attributed to the operation of the French treaties, which embarrassed the fisheries. The copper ore exported was valued at \$226,792.

While some of the New England States have had good success in finding purchasers for abandoned farms, the State of Vermont still has 406 of this character which have upon them good buildings, besides a large number which have no buildings suited for occupancy. However desirable they may be, it is not probable that the newcomers are an improvement upon those who have removed.

A sample of the Western spirit is seen in a Minneapolis paper, which says: "Over \$200,000,000 will be paid to the farmers of these three Northwestern States before the next seeding time. What a grand field for business. What a field for the jobber and the manufacturer. And beyond are Montana, Idaho and Washington—all prosperous and progressive. Wisconsin on the east and Iowa on the south, a large part of which is tributary to Minneapolis as a jobbing point. Is there a section of the Northwest more prosperous than this, or that gives more promise for the future? It is certain there is not. The great Northwest has raised two crops this year. The yield is double what would be accepted as a good production. The farmers are encouraged and hundreds will this year clear themselves of indebtedness."

English buyers are shipping California wine and brandy to London.

Barondess, the labor agitator, who was convicted of extorting money, sailed for Europe from Montreal, but was intercepted at Quebec by his bondsmen and returned to New York.

The Jericho, Jaffa and Jerusalem Railroad through the Holy Land is progressing very slowly. The Turks are very inefficient contractors. They perform the easier parts of the work first, and then a rain storm comes along and washes it all away, and it becomes necessary to begin anew.

French imports during August show an increase of about \$10,000,000, compared with last year, mainly due to deficiency in the domestic food supply, while exports are decreased.

Cotton receipts at New Orleans have largely increased since the withdrawal of the Southern Pacific Railroad Company's ships from Galveston.

Ship Fannie Tucker sailed from New York for Puget Sound June 5 and had a cargo of 1600 tons, comprising 1800 kegs of steel nails, railroad materials, &c. She put into Bahia leaking badly, and after-

ward caught fire and was destroyed. Barratry is suspected and parties are under arrest.

Chancellor Caprivi, in Germany, and others near to the throne in Europe, would have the world understand that there is little danger of war. Nevertheless, international relations are strained.

The trade in American pork in Hamburg is still very limited, the duty of 10 marks per 100 pounds operating as a bar to consumption.

Foreign capitalists are said to have secured an option on all the rice mills in the South, with the expectation of introducing machinery from Holland and cornering the product. The price named is \$2,000,000.

Canadian Pacific steamers will before long run between San Francisco and Vancouver, British Columbia, and it is hinted that the China line may make San Francisco a port of call, for freight and passengers, just to accommodate.

Railway circles are considerably agitated by dispatches from North Dakota and the Northwest Territories to the effect that the Pacific branch of the Soo is being hurried to completion from Hankinson, N. Dak., to Regina, on the main line of the Canadian Pacific, securing for the latter a Southwestern outlet.

The statistics of the commerce of the port of Buffalo for September show aggregates that are wholly unprecedented. The receipts of grain at Buffalo up to September 30 reach this year the magnificent total of 100,000,000 bushels. The figures reached in the former "banner year" of 1890 were 82,000,000. The receipts for September alone were 27,876,488 bushels; the best September record hitherto being 18,640,869. The eastward grain shipments by rail for the season to date are 48,000,000 bushels—double the figures of last year and double the amount shipped by canal. The coal shipments westward by lake have reached 1,623,370 tons for the season to date—a gain of over 300,000 tons over last year. Freight rates have run up to 3 and even 4 cents from Chicago to Buffalo—the latter being a rate not reached since 1888. The canal interest, too, has shared the beneficent results of the bountiful harvest year—the present rate of 4½ cents from Buffalo to New York being an uncommonly good one, and there are still two months more of navigation on the lakes.

An important decision was rendered by the Minnesota Supreme Court with regard to speculation in grain. All contracts for future delivery not intended to represent actual transactions, but merely to pay and receive the difference between the agreed price and the market price on a future day, were held to be null and void.

The privileges granted to the United States by the last reciprocal commercial arrangement with Spain have been extended by royal decree to all nations which in their treaties with Spain have the most favored nation clause, so long as such treaties remain in operation.

Property in Long Island City owned by Union College, Schenectady, is about to be sold to a syndicate at a low valuation, on account of excessive taxation. The land is valued at \$2,000,000, and the tax levy this year is \$518,000.

The building record in Cleveland for September shows an increase over the last two years.

The Grand Jury which has had under consideration the Park place disaster, taking the testimony of witnesses, architects and builders, on Friday brought in a presentment which concludes as follows: "The evidence which we have taken, and

which, should an indictment be found, would necessarily be submitted to a petit jury, does not, in our judgment, establish the criminal negligence of any person or persons beyond such reasonable doubt as is necessary to be made out in a criminal action." In brief, nobody is to blame. But the lithographers are censured for overweighting the floors.

Statistics of railway construction show a gratifying increase of new work under way in the Southwest, exceeding 1000 miles.

Secretary Wanamaker favors a pneumatic postal system for New York city, if an appropriation can be procured.

John W. Dwight of Tompkins County, owner of a farm of 60,000 acres in the Red River Valley of North Dakota, says: "There has never been such a period of prosperity for North Dakotans as now. The crops of this year will sell for more money than all the land on which they were raised would have brought on sale last spring. With a population of only 200,000 people, the crops of the State will bring between \$45,000,000 and \$50,000,000 into their pockets, at the lowest estimate of prices. There were 3,000,000 acres of wheat, from which at least 50,000,000 bushels have been produced. The price of wheat there now is 80 cents."

The *Paper Maker*, talking about the thinness to which iron can be rolled out, says that in the great London exhibition of 1851 there were exhibited sheets having an average thickness of $\frac{1}{1600}$ inch, or less than that of tissue paper.

A traveler in the West says the saddest thing he saw was the old-fashioned rail fence in Pennsylvania, Ohio, Eastern Indiana and Southern Michigan. How cruel of fate not to permit the wire fence to be invented 200 years before it was. In labor and timber enormous sums have been wasted in the building of the old "worm" fences.

Philadelphians claim that their port is not so slow as some people represent. Both imports and exports are larger than they were in 1890. The total imports since January 1, are \$44,452,930, an increase of \$5,015,609 over the first eight months of 1890.

The total value of the cotton-seed production for the past season, which was among the most prosperous, is estimated at \$23,652,000, including crude and refined oil, cake, lint, hulls, &c.

A Rio paper gives a doleful description of affairs in Brazil, due to speculation in business enterprise and bad government. The writer says: "The credit of the country abroad has largely decreased and is being now maintained with difficulty, while at home the currency of the country is depreciated nearly 50 per cent., trade is becoming demoralized and public confidence has been seriously shaken. Many of the best enterprises of yesterday have been absorbed in the reckless bubble speculations of to-day, to the serious loss of investors and the discredit of the country. Many of the enterprises of to-day are in the hands of speculators, while most of the avenues leading to the industrial development of the country are controlled by speculators and monopolies. There is not one hopeful feature in the whole situation outside of the still bounteous production of the soil. There has been a peaceful change of government which has created but little more disturbance than an ordinary change of ministry, but it has left everything in so topsy-turvy and unsettled a condition that the new men seem to be utterly lost in the confusion. In every branch of the public service incapacity and indifference reign supreme. We have a bank problem which no one is able to solve, a currency problem which

no one can understand, a joint stock company problem whose destructive results no one foresees, a transportation and shipping problem whose defects no one appreciates, a custom house problem whose oppressiveness and fatal consequences no one cares to think about, and political problems without number whose solution is being sought in makeshifts and delays, to the incalculable loss of trade and industry in every part of the country." Brazil appears to be repeating the follies of Argentina and to invite the same evil consequences.

The Ordnance Bureau of the navy has, it is stated, procured the most rapid of rapid-firing guns in the world. The Dashiell 4-inch gun was recently tested at the Indian Head proving grounds with the service charge of brown powder, firing in salvos of five rounds. The first five were fired in 20 seconds, the second in 22 seconds and the third in 17 seconds.

When a few years ago the Knights of Labor became numerically so formidable a social force, they too frequently mistook might for right, and they most erroneously assumed that there was no argument so effective as that of force. Hence the many and serious strikes that occurred, and their accompanying great losses to both labor and capital. One of the most powerful and mischievous forces of organized labor was the arbitrary power given to and used by the walking delegate, who ordered a strike at will, and compelled workmen entirely satisfied with their conditions to abandon their work and forego their wages. The walking delegate has recently been most wisely shorn of much of his arbitrary power, and by means of the secret ballot, which has been adopted by many of the labor organizations, the workmen themselves are permitted to decide whether or not a strike shall be organized. As the *Philadelphia Ledger* remarks, strikes are now restricted by the better organizations, and labor itself decides for or against them.

The Aluminum-Alloy Metal Company have just completed extensive works, including rolling mills, at Hampton, Iowa, for manufacture of aluminum-alloy metal. They have purchased the W. J. Wilder patents for the entire country, except one shop right in Yorkville, Ill., the entire output of which is contracted for and sold by the Stan Aluminum Metal Company of Canton, Ohio. Mr. Wilder, the patentee, is superintendent of the manufacturing department of the works at Hampton. The metal made here is composed of zinc, tin and aluminum, according to Mr. Wilder's latest patents, and is manufactured nowhere else. There is no iron in it to induce rust and therefore it needs no paint. The metal is furnished to the trade in rolls up to 60 feet long by 20 inches wide, 50 feet long by 24 inches wide, or in flat sheets. The manufacturers state that the cost is not greater than the best quality of tin plate, while much time and labor are saved in roofing with it, as there are fewer seams to be soldered. The company's plant includes machinery for the manufacture of eave troughs and other articles for roofers' use. An extra quality of metal is manufactured for spinning and stamping purposes and at a cost much less than copper, brass or britannia. It is readily susceptible to plating with precious metals and can therefore be worked in the manufacture of the finest table ware. Tests have been made with oil and it has been found that oil will not "sweat" through it.

The Grand Rivers Company of Grand Rivers, Ky., have made a contract with the railroad by which the freight on their ore is reduced from 65 to 15 cents a ton.

The Iron Age

New York, Thursday, October 8, 1891.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS - - - HARDWARE EDITOR.
JOHN B. KING, - - - BUSINESS MANAGER.

Can Speculation be Checked?

No better evidence that there is a general expectation in trade circles of rising markets and widespread activity could well be furnished than the appearance of warnings against the fostering of a speculative spirit. It is well worth, under the circumstances, to inquire whether it is profitable to take active measures to oppose a speculative tendency. We feel convinced that the majority in the iron, metal and hardware trades are conservative. We know that past experience has taught that, in the long run, the evil after effects of a wildly speculative fever largely counterbalance temporary advantages. We know that a boom usually lets in a good deal of foreign material. In other words, it drives work abroad which could have been kept at home had not the demand been artificially exaggerated by the operations of outsiders. A boom may be defined as a scare of buyers, created by speculators. During such a period only a few are great gainers, a far larger number of manufacturers and traders profit more than they otherwise do, while the great majority look back upon such a period with mortification and regret.

Yet it is difficult to see how a rise can be prevented when circumstances warrant the movement. Speculators cannot be kept out of any business. They are buyers when others are still in doubt, and are only too glad to sell their goods. The more venturesome in the trade are the first to follow the lead thus taken, purchasing raw materials liberally, while they hold back on a part of their product. The craze spreads until all are involved in it, and the great majority have reached the conclusion that a passing fever is to be the normal condition for a long period to come. It is then that he becomes a public enemy who dares to utter sentiments which a short time before would have received general applause.

However numerous those may be who are determined to oppose a rapid rise, there will always be a small but powerful minority who initiate the movement, and give it sufficient impetus to win over converts rapidly. We question whether there are many who have witnessed former booms, who have not back of all their protestations the desire to take an earlier hand in buying, and be quicker at selling than they were before. We believe that this feeling is far more general, and would prove a more potent factor for action than the desire to preserve the trade generally from any future dangers and complications

by abstinence from or resistance to a rising market.

So far as we can learn there are none in the trade now who look forward to advances in price at all comparable with the famous boom period of 1879-1880. The word "boom" is so intimately associated in the minds of many with that extraordinary time that it is possibly misleading and unwise to use it now in connection with the improvement looked forward to. The term has, however, become identified with any upward tendency in trade, and has entered general usage in that sense.

Elevating Chicago Railroad Terminals.

An important question has been raised with Chicago business interests by the local city council. A committee was recently appointed to consider the matter of elevating the steam railroad tracks to secure safe crossings, and proceeded to work rather energetically. Eastern cities were visited, and the elevated terminals in use were thoroughly inspected, for the purpose of comprehending the difficulties met and overcome. The result of these investigations was the development of a strong sentiment in favor of compelling the railroads centering in Chicago to elevate their tracks within the city limits. The opinion of the Corporation Counsel was asked with regard to the power of the city council to require railroad companies to elevate their tracks and a favorable reply was given, based upon provisions in the city charter, the constitution of the State of Illinois, the acts of the Legislature and judicial decisions. Railroad companies were also asked to present their views upon the subject. With the exception of a very few, the railroad corporations are decidedly opposed to the project on account of its expense. They are willing to contribute toward the building of viaducts over their tracks, to avoid grade crossings, or to provide safety gates, but they are not in favor of expending millions of dollars on terminals which will not in any way increase their revenues. The exceptions noted are in favor of elevating their tracks, because they would then avoid grade crossings with other railroads and be able to operate their trains at greater speed in the city limits, but they are also unwilling to elevate their tracks to the full height proposed by the city council, urging a compromise in a slight depression of the streets across which their tracks run.

Public sentiment among the citizens of Chicago runs strongly in support of the position thus far taken by the council on this subject. So numerous have been the accidents at street crossings, and so unsatisfactory is the viaduct system, that if this matter were to be submitted to a popular vote it is altogether probable that a proposition to force the railroads to elevate would be carried by a large majority. But there are other interests than railroads involved in the discussion of this question, and they are making themselves heard. Large manufacturing establishments are located

along these railroads within the city limits, and their entire plants have been arranged to accommodate their business to the level of the railroad tracks. They have side tracks running into, and in many cases extending to, all parts of their works. The receiving and shipping facilities thus enjoyed have not only built up these manufacturing establishments, but they have contributed directly to the growth of the City of Chicago. The owners of these establishments claim that the elevation of the tracks would destroy the usefulness of their works. A case in point is that of William Deering & Co., whose great harvester works are located on the line of the Chicago and Northwestern Railroad within the city limits. The firm claim that their business would be ruined. The plant now covers 40 acres of ground, 16,000 cars are annually handled in and out, and 3000 men are employed. Rolling mills, foundries, machine shops, car shops and innumerable other works of a character requiring location on or near railroad tracks would be affected, besides the thousands of workmen employed in them. The sacrifice of valuable business interests of this character would be so great, and such a rude shock would be given to a huge mass of workmen now tranquilly employed, that the project seems impracticable. And yet the time may not be far off when the force of circumstances may compel this work to be undertaken.

Tin in the United States.

A good many circumstances conspire to make it a difficult matter to learn the exact truth concerning the recent progress and the present status of tin mining in this country. There has been a good deal of unblushing exaggeration on the one side, and some downright lying on the other. In some cases the interests identified with tin mining have sought public recognition in an eager manner. In other instances secrecy has shrouded every movement. As we understand the position of affairs there are three promising fields in which work is going on actively, the Temescal in California, the Dakota mines, and the Virginia deposits. The Temescal management was until recently in the hands of Americans, whose evident purpose was to create a boom on the strength of the tin developments which might aid in raising the value of the large landed estate controlled by the company. The property is owned by an English company, who have now placed the management in the hands of a mining captain, whose efforts will be directed to the opening up of the mines on a scale permitting large operations continuously. Thus far this has not been done.

The principal operation in the Black Hills is the Harney Peak Company, who have done a great deal of development work, but have held back on the question of providing milling facilities for several reasons. We understand that one of them was the question of the location of the railroad, which is now completed to Hill City. Another was that it was not deemed

expedient to build a large plant until the relative importance of the widely scattered parts of the mineral property was fairly well determined. This summer the site for a large crushing mill was selected by the English directors. A good deal of the machinery is on the ground, and the work of preparing the foundations is under way. Enough has been shown by the prospecting on the lodes to prove that the enterprise can only be made profitable by being carried out on a very large scale. It is stated that the indications are that the yield will be about 2 to 3 per cent. of metallic tin, which is a fairly satisfactory percentage.

A third interest which has been operating very quietly is that of a Boston syndicate which has taken up the Cash Mine in Rockbridge County, Va. The deposit has been very carefully studied by a well known Boston professor of metallurgy, and is being developed in a quiet way. A moderate sized experimental plant is now being built, the operations of which will determine further steps.

It will be observed that work is going along in a conservative, substantial and very encouraging manner. There has been a good deal of tentative effort, which has brought about some progress. Since rock tin mining calls for the handling of large quantities of low grade ores, the capital invested must be large, and the time required for preparation is necessarily long. No more dangerous antagonists of the new industry exist than those who raise great expectations by flaming reports of rich deposits and claim the ability to furnish important supplies to the market at short notice. If during the next year we produce enough block tin to meet a fraction of the requirements of this country our tin miners are doing exceedingly well.

An appalling amount of misinformation on the tin plate question is now being precipitated on a suffering public. The political campaign in Ohio is directly responsible for it, and again the friends and opponents of the increased duty on tin plate are engaged in an animated discussion of all the points involved, whether citizens of Ohio or not. The injection of an industrial question into a political campaign is such a departure from the discussion of purely partisan issues, that it would be supposed that writers and speakers would carefully post themselves on all technicalities to avoid making serious blunders. But this does not seem to be the case, and much that is being said or written is evidently evolved from the inner consciousness of speakers or writers. Neither side is free from criticism in this respect, but those who ought to know better are almost daily causing the judicious to grieve. It is most vexatious, for instance, to read in the editorial columns of a great Western daily that "all tin plate is coated with a mixture of tin and lead," when every one ought to know that only roofing plates are thus made. Other errors, equally gross and inexcusable, are being committed by those who are assuming to be leaders of thought and molders of public opinion. An attempt to correct

these errors would be a superhuman task. They will have to live at least until the end of the Ohio campaign.

Pig iron is the object of speculative interest in the West in a quiet way. Several large blocks of both foundry and Bessemer iron have been purchased recently, to be held until some time next year at least, when the purchasers are confident that prices will be much higher than now. So far speculators are not known to have taken any interest in Lake Superior charcoal iron. At one time this was a favorite with those operating for a rise, but the changes which have occurred in the trade have been of a character to discourage investors. The circle of consumers has considerably narrowed, and speculative lots of charcoal iron are not easily disposed of even when the demand is good and prices are on the up turn. With foundry and Bessemer iron, however, the case is different, and the latter especially is looked upon as affording excellent opportunities for speculative transactions. In those sections of the country in which Southern pig iron is chiefly dealt in there has been considerable buying of warrants during the past month for speculative account. We are informed that in New York upward of 10,000 tons have changed hands by private sale, the purchasers being in nearly every case persons not identified with the iron trade.

The Queen and Crescent Route has issued Supplement No. 1 to Tariff Sheet No. 30, effective October 7, giving the rates on pig iron per carload lots from the Southern furnaces to points in the North, East and West. The following are the rates to some of the more principal points from Dayton and Rockwood, Tenn., and from furnaces in Georgia and Alabama, including Rising Fawn, Ga., and Fort Payne, Attalla, Trussville, Birmingham, Bessemer, Wheeling, East Birmingham, North Birmingham, Thomas, Ensley, Woodward and Gadsden (via Attalla), Ala.:

To	From	
	Dayton and Rockwood, Tenn.	Georgia and Alabama furnaces.
Allentown, Pa.....	\$4.07	\$4.77
Altoona, Pa.....	4.80	4.90
Bellefonte, Pa.....	4.97	5.07
Bethlehem, Pa.....	5.12	5.22
Catasauqua, Pa.....	4.67	4.77
Conshohocken, Pa....	4.67	4.77
Elmira, N. Y.....	4.78	5.06
Harrisburg, Pa.....	3.76	3.86
Lebanon, Pa.....	4.06	4.16
Norristown, Pa.....	4.67	4.77
Pottstown, Pa.....	4.52	4.56
York, Pa.....	4.06	4.16

The Eastern Electrical Mfg. Company are making negotiations with the Fire Alarm and Telegraph Company of Utica, N. Y., for the manufacture of 2000 magneto telephone hooks for the Tropical Telephone Company of Boston. The advantage of this hook is that as soon as the receiver is taken from it it recedes into the magneto box and cannot be used again until the operator rings off. This insures better service from the central office. Claude C. Gould of Buffalo, N. Y., is the inventor of the device.

CORRESPONDENCE.

The Coming Boom.

To the Editor: We have read with interest your article in issue of September 24, headed "The Coming Boom." We have not been idle observers of the iron and steel interests of America for years. We are aware, in a measure, of the magnitude and immensity of the greatest interest of this country, the iron and steel trade. It is so large that we have seen it get away with the best brains of the nation; they could not hold it. It became not only a commercial, but a speculative trade, at times, and men lost their heads and fortunes. We are glad to see a more conservative course pursued, and to see iron men keep their heads squarely on their shoulders, and to see very little speculation in it in 1891; and as to 1892—that is a Presidential campaign year, and is usually an off year for business. Is it not as well to call the boom on iron and steel off for 1891, and let 1892, which is three months off, fall in line and take its place according to its environments when we get there? Of course the farmer has good prospects of a fine return for his labor, as Europe must be fed from his granary largely for the next year. It is well he has, for his storekeeper must be paid, in many cases, and just how much he will have left to invest in agricultural implements will have to be computed hereafter. If iron and steel can be produced at present prices, why not go right along steadily and keep things on an even keel. Is there any necessity, with all our producing facilities to-day, for this bobbing up and down, semi annually or annually, in prices of so staple goods as iron and steel? These questions and problems are being worked out with clearer and cooler heads than heretofore. Go fast very slowly, for we may have much unpleasantness to encounter should an injudicious speculative demand suddenly spring up. Steady is the word for these times.

Yours, &c.,

C. A. HENDÉE & SON.

MILWAUKEE, September 28.

Octagon's Steel.

To the Editor: Seeing your ludicrous story of the stenographer's error with regard to the black sheep in your paper of September 24 brings to mind a somewhat similar misunderstanding on the part of a contractor with whom I had some business dealings some years since. The contract for the rock cutting of a large portion of the West Shore Road had been given to a firm of Irish contractors, upon whom I called shortly afterward to see if I could furnish them with the steel which they would need in this work. I introduced myself to the head of the firm and stated my business, and the following conversation occurred:

"I see that you have been successful in capturing the rock cutting work of the West Shore Road, and would like very much to furnish you the octagon steel which you will need in this work. I suppose that you will require a large quantity of 1½ and 1¼ inch octagon."

Whereupon he said, "Young man, you need not tell me anything about steel. I have been using steel for the last twenty-three years and me partner and meself have come to the conclusion that we don't want to use no more of Octagon's steel; we don't think he makes good steel any more, and we are going buy Black Diamond steel for this work. We don't want any more of Octagon's."

JAMES B. STOKES.

SAN FRANCISCO, Cal., September 30.

The repairs to Furnace A of the Crane Iron Company, at Catasauqua, Pa. have

been completed and the furnace will probably resume blast during the present week. The repairs made have been quite extensive and will possibly add a small amount to the productive capacity of the furnace. A new hoist has been erected nearer the furnace, the cast house and the stock house thoroughly overhauled and the furnace relined. When this furnace blows in it will make the third blast furnace now in operation at Catsaugua owned by the above firm.

The annual report of the Boston and Montana Consolidated Copper and Silver Mining Company for the fiscal year ending June 30, 1891, shows a product of 26,693,842 pounds of copper, sold for \$2,937,134, and 285,856 ounces of silver, at \$160,039. The expenses were \$2,101,313, leaving a mining profit of \$995,860. Interest payments and the cancellation of bonds called for \$251,359, and dividends for \$625,000, leaving a surplus of \$119,500. Added to a former surplus of \$1,095,029, a total of \$1,214,529 is reached, out of which there was expended for mining property \$25,000, for construction at the mines \$104,834, and for the smelting works at Great Falls, Mont., \$462,980, leaving a surplus of \$621,715. The cost of fine copper at the mine was 5 71 cents, and laid down in New York, sold, 7.87 cents.

New machinery will be erected at Port Richmond by the Philadelphia and Reading Railroad Company to handle the hot ashes coming from the locomotives. An elevator of 181 feet centers will convey from under the track the hot ashes dumped by the locomotives, which it will deliver into a storage pocket at the rate of 1 1/4 tons per minute. The conveyor chain, with which the apparatus is equipped, will be dust guarded, so as to reduce the wear to a minimum. This is found a necessity where conveyors are employed to carry such material as ashes, and several other precautions have also to be taken to prevent undue wear of parts. The improvement will effect a great saving of labor.

A Cohoes, N. Y., man has invented an ingenious contrivance to be used on motor cars. It is called an automatic supporter. In the cars now in use are two bars extending along the roof, to which are attached straps to support standing passengers. The straps swing and strike passengers in the face. This new device does away with these. It is a nickel-plated cylinder about 2 1/4 inches long, which contains springs, to which are attached straps. At the end of the strap is a nickel-plated piece of iron, which can be taken between the fingers. When the passenger takes hold of this the spring allows it to come down about 10 inches, furnishing a support. When not in use the spring carries it back into the cylinder.

OBITUARY.

JOHN SHADBOLT.

By the death of John Shadbolt, which occurred at his home in Milwaukee, Wis., on August 23, that city and State lost an honored and foremost citizen and the iron and manufacturing interests of the Northwest an important representative, for he was not only a prominent member of a large business community, but the founder of what has developed into one of the leading iron and general supply houses in the West.

John Shadbolt was the founder of what is now the Shadbolt & Boyd Iron Company located at Milwaukee and doing business in every State and Territory from Wisconsin to the Pacific Coast, the actual trade of

and faith of his younger partner, and their united efforts were rewarded with the most substantial success. In 1888 the concern became a stock company, and is now doing more business in a month than its two promoters ever dreamed of doing in a year when they began upon a modest capital. Mr. Shadbolt was president of the company until his death, and will be succeeded by Mr. Boyd, while F. R. Ellis succeeds the latter as vice-president. The death of the senior member and for so many years the head of the house will not change the business in the least, and it will continue under the old and well-known name.

Mr. Shadbolt is referred to as a man of retired disposition and of quiet, unassuming manners, and while never pushing himself forward advanced steadily to business prominence by reason of his natural fitness. He had no taste for public life, and persistently declined office or particular honors, preferring to be known as a principal factor in successful legitimate business undertakings. The portrait herewith presented was made from a recent photograph, and is suggestive of the kindly, honest, capable and unobtrusive details of Mr. Shadbolt's character.

HENRY W. RATHBONE,

president of the Elmira Iron and Steel Rolling Mill Company, Elmira, N. Y., died at his home in that city on the 29th ult. Mr. Rathbone has been failing in health for about a year past and during the last two months had been confined to his bed. His death was caused by a general breaking down of the system and his advanced age. Mr. Rathbone was born in Oxford, Chenango County, N. Y., in 1813, and during his earlier business career was engaged in manufacturing paper in his native village. In 1839 he moved to Rathboneville, where he remained until 1858, when, with a number

of others, he organized the company of which he was president at the time of his death. Mr. Rathbone was one of the most prominent and respected citizens of Elmira, where his loss is deeply felt. He had done much to endear his fellow citizens to him, and was particularly held in esteem by his employees, to whom he had always been most generous in his treatment.

The strike of the employees at the different blast furnaces in the Shenango Valley, Pa., for the restoration of the wages paid last year previous to the shut down on account of the coke strike, has been settled. At a meeting of the furnace operators held in Sharpsville, Pa., last week, it was decided to give the men the advance in wages they ask for, which amounts in some cases to 10 cents per day and to others 15 cents per day. All the furnaces which were banked down on account of the strike have again resumed operation, with the exception of the Claire of the Claire Furnace Company, Limited, at Sharpsville, Pa., which is being extensively repaired.



JOHN SHADBOLT

which last year we are advised amounted to about \$1,750,000. The company have a paid up capital stock of \$250,000, and a controlling interest in the malleable iron works of Racine, Wis., a hub and spoke factory at Cadott, Wis., and several large saw and material supply mills in other parts of the same State.

John Shadbolt was born December 19, 1816, in Saratoga County, N. Y. He grew up a farmer, and subsequently learned the carpenter's trade. In 1846 he removed to Milwaukee, then a small, struggling town, and opened a shop as contractor and builder, in which capacity he erected or contracted for many of the largest and most prominent early buildings of the city. He removed in 1858 to Adrian, Mich., where he engaged in farming until 1863, when he returned to Milwaukee and became one of its substantial citizens and business men, entering into partnership with Francis Boyd, an energetic young man with more of a keen insight into the prospects of the future than capital to carry out his advanced ideas. Mr. Shadbolt added his capital and careful conservative business experience to the push

English Iron Statistics.

Pig Iron.

The British Iron Trade Association has just published figures covering the production of pig iron during the first six months of the current year. The production was 3,812,787 gross tons, as compared with 4,168,464 gross tons during the first half of 1890. The principal decrease was in the Cleveland district, from 1,409,130 tons in the first six months of 1890 to 1,320,063 tons in the first half of 1891. This production was distributed as follows: 1,322,204 tons of Bessemer; 2,072,488 tons of forge and foundry; 75,586 tons of spiegel and ferro and 342,509 tons of basic iron. The stocks in makers' hand and in warrant stores declined from 1,367,248 tons on December 31, 1890, to 1,295,572 tons on June 30, 1891. Mr. Jeans presents the following:

Summary of Results.

	Tons.
The stock of pig iron at December 31, 1890, amounted to	1,367,248
The production of pig iron during the first half of 1891 was	3,812,787
Total	5,180,035
Deduct stock on June 30, 1891.	1,295,572
Total deliveries of pig iron for six months to June 30, 1891	3,884,463
Total deliveries of pig iron for six months to June 30, 1890.	4,492,468
Decrease in deliveries for the first half of 1891.	608,005
Total consumption of pig iron in United Kingdom for six months to June 30, 1891, after deducting exports of pig to foreign countries	3,532,554
Total consumption of pig iron in United Kingdom for six months to June 30, 1890, after deducting exports of pig to foreign countries.	3,902,089
Decreased consumption in the United Kingdom.	369,535

Bessemer Steel.

There was also a decline in the production of Bessemer steel, the total production for the six months of 1891 being 923,005 tons, against 1,055,280 tons during the first half of 1890. Of the production of the first six months of the current year Mr. Jeans reports 735,528 tons of acid steel and 187,477 tons of basic steel, of which 119,761 tons was made in the Cleveland district. The returns for the make of rails show a decline from 510,459 tons during the first six months of 1890 to 423,934 tons during the corresponding period of the current year. So far as has been reported, the product of finished Bessemer steel other than rails was as follows during the period under review: 43,223 tons of plates, fish plates and angles, 132,840 tons of bars, T's and forgings, 120,230 tons of blooms and billets, 6841 tons of sleepers and 3730 tons of castings.

Open-Hearth Steel.

The only exception to the general decline in the product is shown in the records of the output of open-hearth steel. During the first half of 1890 the total product had been 753,573 gross tons. This was increased during the corresponding period of the present year to 778,888 tons, of which only 64,798 tons was basic steel. So far as has been reported, the open hearth steel was used for the following purposes: Plates and angles, 291,367 tons; bars, tin-plate bars, T's and forgings, 134,400 tons; blooms and billets, 100,481 tons; castings, 8450 tons; and rails 8155 tons. On June 30, 1891, there were employed 224 acid and 24 basic furnaces, while there were unemployed 75 acid and 12 basic furnaces, with three and two, respectively, under construction.

The Oliver Iron and Steel Company, of Pittsburgh, have called a meeting of their stockholders, to be held in their offices in Pittsburgh on December 8, 1891, for the

purpose of voting for or against a proposition to increase the capital stock of the company from \$1,600,000 to \$2,000,000. On inquiry it has been ascertained that the above increase is for the purpose of providing funds to reimburse the company for expenditures heretofore made for improvements and to provide additional working capital.

Tests of Simple and Compound Locomotives.

Competitive tests of a simple consolidation locomotive and a compound consolidation of the Vauchain four-cylinder type were recently made on the Western New York and Pennsylvania Railroad. From the *Railroad Gazette* we take the following summary of the trials:

The engines were in all respects of the same dimensions, excepting those parts that have to be changed in compounding. The simple engine had cylinders 19 x 26 inches and four pairs of driving wheels connected, 50½ inches diameter. The compound had high-pressure cylinder 13 inches diameter and low-pressure cylinder 21 inches diameter, with 26 inch stroke. The wheels were of the same size as those of the other engine. The boilers of both engines had 1879 square feet of heating surface, the grate area being 29 square feet. The compound carried 175 pounds boiler pressure and the simple engine 160 pounds. The compound weighed about 6000 pounds more than the simple engine.

A variety of tests were made during three round trips with the compound and two trips with the simple engine. Indicator diagrams were taken at two minute intervals, a high-grade pyrometer was used to show the smoke box temperature, and a vacuum gauge was employed to ascertain the intensity of the draft. The quantity of coal used was ascertained by weighing, and the water consumption was measured by a float index. The speed of the two engines during the runs did not vary sufficiently to affect the fuel consumption to a perceptible extent. On the south bound trips the average load of the simple engine was 890,700 pounds, and during the return journeys the average load of the same engine 2,639,966 pounds. On the south bound trips the load of the compound averaged 1,059,041 pounds, and returning it averaged 2,787,377 pounds. The simple engine used 28,800 pounds of coal and 181,790 pounds of water in two round trips, and the compound used 30,010 pounds of coal and 230,850 pounds of water during three round trips. This makes an average of 14,400 pounds of coal and 90,895 pounds of water per round trip for the simple engine, and 10,003 pounds of coal and 76,950 pounds of water for the single round trip of the compound. Calculating on this basis the compound locomotive did the work with 30 per cent. less fuel and 16 per cent. less water than the simple engine, while pulling a train that was about two loaded cars, carrying 60,000 pounds, heavier than the train moved by the other engine. The average smoke box temperature of the standard engine was 689° and that of the compound 630°.

An Improved Fuel-Gas System.

Owing to unforeseen delay in the prosecution of some important patents in connection with the system of the Chicago Heat Storage Company, we regret to announce that the continuation of this article must, of necessity, be deferred for the present, as it relates principally to description and illustration of the apparatus and its operation. To such of our readers as are interested in the subject, we would say that the publication will be resumed in the earliest possible issue. It may be men-

tioned that several important applications of the system are in progress in Chicago and well advanced toward completion, from which crucial results may be expected in a week or two, and will be duly noted.

Professor Turner of Birmingham has inquired into the cause of the red stains which are common on Birmingham copper and brass, cartridges, buttons, &c., and lead to considerable losses. The workmen ascribe these stains and spots to burning, sulphur, furnace dust and dirt, to the iron poker, and are sure that the stains pass through the whole mass. Mr. Turner found none of these views correct and the stains confined to the surface; nodules were never observed. Finally he evaporated water, salt water, pickle and dilute acids on the surface or wrote with such ingredients on the brass; then he did obtain stains, especially when chlorides had been used, but not with zinc chloride. The conclusion is that any chlorides attack the zinc and liberate the copper; zinc chloride cannot do this and the Birmingham water contains notoriously sufficient chlorides to produce the effect noticed. The stains are therefore caused by the water being allowed to dry on the material after washing upon completion of pickling. The brasses themselves Mr. Turner found very uniform.

There is nothing new to report at this time in regard to the matter of Carnegie Bros. & Co., Limited, adopting a new sliding scale for the Edgar Thomson Steel Works, at Bessemer, Pa., mention of which was made in our issue of last week. The scale now in force does not expire until January 1, and it is not probable that a new scale will be submitted to the men until a number of meetings or conferences have been held between representatives of the firm and the employees. From the best information obtainable, it can be stated that the reason advanced by the firm for the proposed reduction is the fact that very modern appliances at a great outlay of money have been introduced into the Edgar Thomson Steel Works during the past year or two, by the use of which the tonnage men have been enabled to increase the output very materially. On account of the large expenditure necessary to erect this modern machinery, the firm feel that they should partake of the benefits derived from it as well as the workmen, and it is with a view of equalizing the wages now paid to the tonnage men that notice has been given that they desire a new scale.

The New York *World* has reiterated its reports that the Cooper-Hewitt concerns were being placed in the English market. This time the Passaic Rolling Mill and the Warren Iron Company are coupled with them. We have the authority of some of the parties interested for the statement that there is no truth in the report.

The hearing in the injunction case in the suit of Carnegie, Phipps & Co., Limited, of Pittsburgh, against the Philadelphia Natural Gas Company of that city, which was to have been heard on Friday, the 2d inst., was postponed for two weeks from that date. In the meantime the injunction remains in force, which prohibits the gas company from shutting off the gas in the mills belonging to Carnegie, Phipps & Co., Limited, which they have been supplying.

The Safe Harbor Rolling Mill, located at Safe Harbor, Pa., is advertised for sale. The plant contains one single and 18 double furnaces, eight heating furnaces and two trains of rolls. The mill was built in 1848.

MANUFACTURING.

Iron and Steel.

Grace Furnace of the Brier Hill Iron and Coal Company, at Youngstown, Ohio, is now turning out on an average 225 tons of Bessemer iron per day. A number of improvements were made some time since which have added materially to its product.

The output of the Mahoning Valley Iron Company, Youngstown, Ohio, is about 225 tons per day, consisting of bars, angles, plates, sheets, steel rails and polished shafting. Several weeks since this firm leased the plant of the Wheatland Iron Company at Wheatland, Pa., and since that time old rails for the finishing department have been done away with.

The Akron Iron Company of Akron, Ohio, have recently added a three-high roughing housing to the 18-inch bar mill, and they are now building an additional heating furnace for the 8-inch mill with the Sterling boiler attached to utilize the waste heat.

Somers Bros. & Co., proprietors of the Somers Iron Works at Struthers, Ohio, have been manufacturing iron and steel sheets for ten years past. Their specialty is light steel sheets.

Some time since announcement was made that a corporation had been formed, to be known as the Wrought Steel Car Wheel Company, with Wm. P. Shinn of Pittsburgh as president. At the time the concern was organized it was anticipated that the works of the new company would be located in Pittsburgh or in close proximity to that city. Announcement is now made that the concern has decided to locate somewhere near New York City.

Work on the new band-saw mill now being erected by Singer, Nimick & Co., Limited, proprietors of the Sheffield Steel Works, at Pittsburgh, is progressing rapidly and in a short time the plant will be ready for operation. It is being erected on a site 150 feet front by 175 feet deep. The new building is to be constructed entirely of iron and nearly all the material is on the ground. The manufacture of band saws is carried on now in the other mills of this firm, but the present arrangements are incomplete and all machinery of this kind will be removed to the new department.

At a meeting of the stockholders of the Pittsburgh Bridge Company, held last week, it was decided to increase the capital stock of the company from \$100,000 to \$250,000. Their business is constantly increasing, and at the present time they are turning out more work and have more orders on hand for future delivery than ever before in their history.

The Chicago Crucible Steel Casting Company have sold their plant at Elston and Webster avenues, Chicago, to A. Egerton Adams, who has dismantled it of the machinery and equipment. The buildings will be converted to other uses than the manufacture of steel.

The Chicago Forge and Bolt Company and the American Bridge Works, Thirty-ninth street and Stewart avenue, Chicago, are now running night and day in all departments, having a great deal of work on hand which must be delivered promptly. Over 1000 tons of finished material were shipped from the bridge works last month. The company are now building a new office and are also making some improvements in their plant. The rolling mill, formerly operated by the Straight Fiber Iron Company, is being repaired and put in readiness to be operated by a company from Wilmington, Del., to whom it has been leased. The product of this mill has been bar iron exclusively.

The Savernake Steel and Tin-Plate Company has been chartered at Savernake, Va., for manufacturing steel, iron and tin plate and to mine, produce and manufacture iron and iron ores and other minerals. The capital is \$1,000,000, and the right is given to hold 50,000 acres in the counties of Rockbridge, Amherst and Nelson, Va. The company will mine tin ores and produce its own pig tin, and the capacity of the proposed works will be 3600 boxes of tin plate per week. The directors of the company are prominent business men of this country and England, many of whom are already closely identified with the iron trade. The officers are: President, Titus S. Emory of Philadelphia; vice-president, Thomas Dunlap of Savernake, and secretary, L. T. Marye of Richmond, Va.

The plant of the Willson Aluminum Company, recently organized, now in course of construction at Spray N. C., will have a capacity of 400 pounds daily.

An English concern, under the style of the Embreeville Freehold, Land, Iron and Railway Company, Limited, are building a coke furnace at Embreeville, Tenn., which it is expected to have completed in December next. The furnace is 80 x 19 feet, and equipped with

three Cowper-Kennedy stoves, each 20 x 75 feet. Local brown hematite ore and Pocahontas coke will be used.

Efforts are being made to organize a company to build an iron furnace in McMinn County, Tenn., to utilize the product of the McSpadden iron property, which is now being developed by J. T. Harris, of Birmingham, Ala.

It is stated that the Manganese Coal and Iron Company of New Castle, Va., contemplate the construction of a blast furnace for making pig iron and a furnace for making spiegeleisen in the near future.

No. 1 stack of the Alice furnaces of the Tennessee Coal, Iron and Railroad Company, Nashville, Tenn., will be blown in about the middle of this month. This furnace blew out on August 7, and during its idleness has been relined and improved in other ways.

On October 1 a boiler burst in the plate mill of the Cleveland Rolling Mill Company.

Hattie Furnace of the Lady Ensley Coal, Iron and Railroad Company, Sheffield, Ala., blew in on the 7th inst., after completing repairs. The furnace had been out of blast since July 8.

The American Tube and Iron Company of Middletown, Pa., and Youngstown, Ohio, with branch office in Pittsburgh, are filling a large order for pipe with the Matheson joint for shipment to the Hawaiian Construction Company, Honolulu. The order consists of 7500 feet, and it is to be used in laying the water main of the reservoir at Pearl City to the Peninsula. In addition to the above, the firm have recently made large shipments of pipe to Southern States. Both their plants are being operated to their full capacity.

Machinery.

Wm. Tod & Co., founders and machinists, of Youngstown, Ohio, have received an order for a Porter-Hamilton engine to be placed in the Homestead Steel Works of Carnegie, Phipps & Co., Limited, Homestead, Pa. They are also building a number of heavy boiler fronts of special design for the same concern.

The entire plant of the Westinghouse Air Brake Company at Wilmerding, Pa., has gone on short time. At present the men are working only seven hours per day and five days per week, the works being idle entirely on Saturday of each week.

The Wheeler Condenser and Engineering Company have recently filed articles of incorporation with the Secretary of State, at Trenton, N. J. The company have bought out the entire plant and business of the Colwell Iron Works at Carteret, N. J., which is one of the largest concerns in the country manufacturing vacuum pans and special machinery for sugar refineries, salt works, condensed milk factories, &c. The Wheeler Company will continue to manufacture Wheeler's Patent surface condensers and other of his specialties. The capital stock of the company is \$300,000, and the incorporators are as follows: Fred'k Meriam Wheeler of Montclair, N. J.; Aaron Vanderbilt of New York City; Clifton H. Wheeler of Brooklyn, N. Y.; William H. Hampton of New York City, and Charles W. Wheeler of Brooklyn, N. Y. The headquarters of the company will be at 92 and 94 Liberty street, New York City.

The following are some of the orders recently placed with the Ball Engine Company of Erie, Pa., for their well-known engines: 100 horse-power tandem compound for the Beatrice, Neb.; Rapid Transit Company; 30 horse-power cross compound for the Buffalo Street Railway Company; 100 horse-power for the Citizens' Electric Illuminating Company, Pittston, Pa.; 300 horse-power cross compound for the California Electric Light Company, San Francisco; 150 horse-power for the Falconer Mfg. Company, Falconer, N. Y.

The Arctic Ice Machine Mfg. Company, in Cleveland, Ohio, made an assignment. The liabilities, it is said, will exceed the assets \$100,000.

The Wallis Foundry Company of Girard, Ohio, are making a number of improvements in their foundry in order to keep pace with the demands made on them for their manufactures.

Riter & Conley of Pittsburgh, manufacturers of boilers and machinery castings, recently shipped to the West Superior Iron and Steel Company, at West Superior, Wis., a boiler 30 feet long and 10 feet 2 inches in diameter.

The Norwalk Machine Works, at Norwalk, Ohio, have consolidated with the Star Drilling Company of Akron, Ohio, and the operations of the two concerns will hereafter be carried on at the latter place.

The Lodge & Davis Machine Tool Company, builders and dealers in machine tools, have appointed M. P. Satterthwaite, 173 Superior street, as their representative for Cleveland and vicinity.

Hardware.

Whitman & Barnes Mfg. Company contemplate making additions to the line of goods manufactured at some of their factories, which will be of interest to the hardware trade. It is understood that at their Akron factory, in addition to their present line, they will manufacture twist drills, reamers, milling cutters, taps and dies and other small machinists' tools. At their Canton factory they will continue the manufacture of all kinds of drop forgings, as heretofore, making a specialty of threshing machine teeth and bicycle forgings.

The Fred. J. Meyers Mfg. Company of Covington, Ky., are operating all of their various departments to their fullest extent, the wire and iron works department being probably the hardest pushed. Among recent contracts secured have been all the wire window guards and wire grating work for the new insane asylum at Tacoma, Wash.; also all the wire work for the new insane asylum at Jackson, La., and all brass work for the East Tennessee National Bank, Knoxville, Tenn., and all the wire and iron work for the Odd Fellows' Hall at Toledo, Ohio. There is an excellent demand for the Hunter Sifter.

The Wheeling Lamp and Stamping Company of Wheeling, W. Va., have recently put on the market a new automatic oil can, which is having a large sale among the trade. Arrangements are now being made for a consolidation of the Wheeling Lamp and Stamping Company with that of the Nail City Lantern Company, also of Wheeling. A number of minor details have yet to be arranged before the consolidation can be completed, but it is expected that within a short time the business of both concerns will be conducted under the same management.

The National Screw and Tack Company of Cleveland are erecting a main building 100 feet long, to relieve their now crowded factory.

William Schollhorn Company, New Haven, Conn., advise us that they are having a large trade on the new Bernard Plyer, which they are putting on the market.

Economist Plow Company, South Bend, Ind., are now erecting a blacksmith shop, 60 x 140 feet, of brick, with suitable furnaces, and propose to equip it with necessary machinery for largely increasing their present facilities. They are also erecting two sections of warehouse, each 80 x 100 feet, also a stock room 60 x 100 feet, and beam, coke and coal sheds. The company have already purchased the requisite machinery, shafting, pulleys, hangers, &c., and hope to be in readiness to start up the new department not later than December 1.

The Paragon Mfg. Company have been in incorporated at New Haven, Conn., with a capital stock of \$16,000. The company will manufacture hardware, tools and specialties, considerable attention being also given to electro plating. The officers of the company are: G. T. Moore, president; Harry L. Elliott, treasurer, and Chas. L. Joy, secretary and superintendent. The company's salesroom in New York is at 112 Chambers street.

The increasing business of the Cortland, N. Y., Door and Window Screen Company has made an enlargement of the plant a necessity. A new warehouse is under way. It will be a two story frame structure, 45 x 100 feet, and will almost double the storage capacity. A one-story building, 40 x 60 feet, will be added to the factory proper. This will be filled with new machinery.

A recent application has been made to the Ohio Legislature for privilege to change the name from the Cincinnati Spring Company to the Hess Spring Company, which is simply a change of the name of the firm, not a change in the production in the least. The style of this company ever since their organization in 1880 has been the Cincinnati Spring Company. The company were organized by Alfred Hess, who has continued their president since that date. New machinery has lately been added to their plant, which now gives them an average output of between 600 and 800 sets of springs per day.

M. Hecklinger, assignee, announces the sale of the Hotchkiss Bolt and Nut Company's works at Greensburg, Pa., on October 22, 1891. These works were erected in 1890, and are described as containing a complete outfit for the manufacture of bolts, nuts, &c., together with several acres of land, on which the factory is built. The latter has been in active operation up to October 1. A large quantity of finished bolts, nuts, washers, &c., as well as a large amount of raw material, will be offered in connection with the works.

Miscellaneous.

Announcement has been made in these columns before that the Pittsburgh Reduction Company of Pittsburgh were erecting new works for the manufacture of aluminum at Kensington, a new manufacturing town re-

cently established on the line of the Allegheny Valley Railroad, about 19 miles from Pittsburgh. Work on the new plant has been in progress for some time, and it is expected it will be completed some time during the present month. The new plant will have about the same capacity as the old plant of the firm, but arrangements have been made by which the plant can be readily enlarged at any time that the business of the firm may warrant such enlargement.

The Heath & Milligan Mfg. Company have completed plans for a new paint factory to be built on Seward street, between Eighteenth and Lumber streets, Chicago. The factory will be 100 x 200 feet, four stories high, not including the basement, and the exterior will be built of brick and stone. The interior will be of the most solid mill construction. Work has begun on the foundations, and it is expected that the building will be completed by December 1. The company will retain their offices and salesroom at 170 to 174 Randolph street.

The Providence Steam Engine Company, Providence, are changing the drums of the Moore boilers at the Narragansett Electric Light Company's station to the Babcock & Wilcox system. The Babcock & Wilcox Company of New York have the contract for the alterations which have been delayed until the job of putting in 1120 horse-power of their own boilers was completed.

Among the licenses recently granted for corporations in Illinois are the following: The Aluminum Novelty Company, at Chicago; capital stock, \$50,000; incorporators, Oscar F. Millard, O. Pierce and B. C. Pierce. The Humber Cycle Company, at Chicago; capital stock, \$100,000; incorporators, Horace Bell, George K. Barrett and William C. Thorpe. Continental Bolt and Iron Works, Chicago; capital stock, \$60,000; incorporators, A. Egerton Adams, Fred M. Steele and D. P. Donelson. The Illinois Metallic Packing Company, Chicago; capital stock, \$2400; incorporators, Charles L. Anderson, George A. Mitchell and Charles P. Mitchell. The Miller Keyless Lock Company, Chicago; capital stock, \$250,000; incorporators, J. B. Miller, J. W. Simpson, J. D. Chambers and Frank B. Brown. The West Duluth Furnace Company, Chicago; capital stock, \$40,000; incorporators, Charles Himrod, Kirk Himrod and Jesse Holden.

The immense warehouse of the Mansur-Tebbets Agricultural Implement Company, in St. Louis, was destroyed by fire on Sunday morning. The stock was valued at \$225,000.

The Buena Vista Mfg. Company, Buena Vista, Va., have assigned their property, with a view, it is said, to reorganization of the concern.

The factory of the Weir & Craig Mfg. Company, plumbers' supplies, 2421 and 2423 Wallace street, Chicago, was partially burned on the 23d ult. The building that was burned was a story and a half brick structure 250 feet long and 60 feet wide. The main building of the company is just south of the part destroyed. The flames did not reach this, however, but considerable damage was done to the stock by smoke and water. The most serious loss is in patterns, of which the company had a large and valuable stock. Aside from the patterns there was a large amount of plumbers' supplies on hand, the value of which is estimated at \$75,000. This stock was more or less damaged. The firm estimate their total loss on buildings, machinery and stock at \$21,000, covered by insurance.

The S. Obermayer Foundry Supply Mfg. Company of Cincinnati, Ohio, desire to inform the trade that they are not in any manner connected with any other establishment of a similar character, notwithstanding reports that are being circulated to the contrary. We are informed that this announcement is made by reason of the fact that certain parties now engaged in the business of furnishing foundry supplies are representing that they are a branch of the Cincinnati establishment. The latter concern state that they are running their plant to its fullest extent on the specialties made by them.

Boston parties have been looking over the city of Pottstown, Pa., with a view to securing a desirable site for a safe and vault manufacturing plant. It is said that the works if built will give employment to 250 hands.

Plans have been completed by the Cramp Shipbuilding Company for their new yard on the lower Delaware below Philadelphia. The yard will have a frontage of 1200 feet on the river and a depth of over 3000 feet. The plans include two mammoth docks and a pier, and what it is said will be the largest dry dock in the world. The new yard will be about eight times larger than the present yard of the Cramps at Kensington, and will enable the firm to compete with any similar establishment in the world.

TRADE REPORT.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, }
CHICAGO, October 7, 1891.

Pig Iron.—Coke Iron shows increased activity. Round lots of both Northern and Southern have been purchased by large consumers, while the improved demand for carload lots for quick delivery shows a better condition of trade among the small foundries. There is more inquiry for round lots, and the prospects are favorable for heavy sales of local Iron in the near future. Prices are well maintained, notwithstanding the efforts of heavy consumers to hammer values down to the level of those prevailing when they placed contracts last spring. The slowness with which the market has responded to improved conditions in general business has developed a bearish tone among buyers, and it would seem as though they were being unduly influenced by the Iron trade, and were losing sight of great external influences which must before long operate to enhance all values. Lake Superior Charcoal is in demand from Car Wheel makers, but they insist that they should not be made to pay more than the Malleable people did in June. Competition among sellers for a 1500-ton order has weakened the market to some extent, but it is still above the low level of that month. Quotations are as follows, f.o.b. Chicago:

Lake Superior Charcoal.....	\$17.00 @	\$17.50
Local Coke Foundry, No. 1.....	15.50 @	16.00
Local Coke Foundry, No. 2.....	15.00 @	15.25
Local Coke Foundry, No. 3.....	14.50 @	15.00
Local Scotch.....	16.00 @	16.50
Ohio Strong Softeners.....	17.75 @	18.25
Southern Coke, No. 1.....	15.75 @	16.25
Southern Coke, No. 2.....	15.00 @	15.25
Southern Coke, No. 3.....	14.50 @	15.00
Southern, No. 1, Soft.....	15.00 @	15.75
Southern, No. 2, Soft.....	14.50 @	14.75
Southern Gray Forge.....	14.00 @	14.50
Southern Mottled.....	13.50 @	14.00
Tennessee Charcoal, No. 1.....	18.00 @	
Alabama Car Wheel.....	20.50 @	21.50
Coke Bessemer.....	17.00 @	18.00
Hocking Valley, No. 1.....	17.00 @	18.50
Jackson County Silvery.....	17.50 @	18.00

Spiegeleisen.—Transactions in Spiegel have been confined to the East. Nothing of interest has occurred here, and quotations are unchanged—viz.: \$28 for 20 % and \$38 for 30 %.

Bar Iron.—Large orders have been placed by jobbers, who find their stocks running low on account of slow shipments from mills with which they have contracts, together with a very active demand from their own trade. Orders are now coming to jobbers from a class of consumers they do not usually reach, showing that slow delivery by the mills is general. Inquiries for Iron are in the market, but they are not very numerous. Mills making a specialty of this class of work are inclined to offer easier terms for early delivery, but ask full prices for January and February. Mill orders are quoted on a basis of 1.75¢ @ 1.80¢, half extras, Chicago, while store prices are firm at 1.85¢ @ 2¢.

Structural Iron.—Manufacturers are now being crowded for more rapid delivery, as the season is growing late and outdoor work may be suspended by inclement weather at any time. Prices show no change, although an effort is being made to stiffen them.

Plates.—A moderate business has been done in both mill lots and orders from stock. Mill prices are as low as ever, but the circle of cheap sellers is smaller. Dealers quote small lots from stock as follows: Tank Steel, 2.40¢ @ 2.60¢; Tank

Iron, 2.50¢ @ 2.60¢; Sheet Iron, Nos. 10 to 14, 2.60¢ @ 2.70¢; Steel do., 3¢ @ 3.25¢; Shell Steel, 2.75¢ @ 3¢; Flange Steel, 3¢ @ 3½¢; Fire Box Steel, 5¢ @ 5½¢. Boiler Tubes are nominally quoted at makers' discounts, but neither manufacturers nor jobbers are adhering to them. Mill lots of Tank Steel are still being sold by some makers at the extreme prices recently current.

Sheets.—Business in Galvanized Iron is steadily growing large, and stocks here are badly broken. Standard sizes are very scarce and hard to get, and in rush cases the price is a minor consideration; still prices are generally firmer, perhaps 2½ % advance all round on mill lots. Jobbers now quote 60 and 10 % on Juniata, but only to very best customers. Black Sheets are in active demand; No. 27 Common is quoted 3.20¢ from stock, but concessions are made occasionally.

Merchant Steel.—The demand for cheap Steels is very good, but no special change has occurred in prices. Carload lots of Tire Steel can still be had at 2.30¢ @ 2.40¢; Open-Hearth Spring, 2.25¢ @ 2.30¢, and Machinery, 2.30¢ @ 2.40¢, Chicago delivery. Tool Steel is in active request, with the tendency of buyers toward the higher grades, rather than those sold at the lowest price. Quotations range from 6½¢ upward, according to quality.

Track Supplies.—Steel Rails are selling in moderate quantities at \$31.50 @ \$33, according to conditions of sale. Nothing new is reported. Splice Bars are nominally worth 1.85¢, but business is light. Track Bolts, Hexagon Nuts, are quoted at 2.75¢, without inducing orders. Spikes are still held at 2.20¢ @ 2.25¢, but sales are suspected at lower figures.

Old Rails and Wheels.—The situation of Old Iron Rails is perplexing. Perhaps never before at this season of the year have they been in such light demand. Buyers seem to be afraid of them. A great many of them are offering, and dealers have bid \$21, which shows how demoralized the situation is. As there is little prospect of such an offer being accepted by the sellers, who would probably consider \$22.50, nothing has transpired in some little time to fix a definite price. Old Steel Rails are quiet and unchanged at \$14 @ \$16, according to length. Old Car Wheels are in fair demand at about \$16 @ \$16.25.

Serap.—While the demand here is light the stock held by dealers is not very heavy, and they are maintaining prices quite firmly, especially on Forge. Country dealers, however, have accumulated stock in every quarter, and unless the consumption increases soon they will be likely to force trade and cause a break. We quote as follows, per net ton: No. 1 Railroad Forge, \$19 @ \$19.25; No. 1 Forge, \$18.50; No. 1 Mill, \$14; Fish Plates, \$22; Car Axles, \$23.50; Light Iron, \$9; Machinery Cast, \$12.50; Stove Plate, \$8.50; Cast Borings, \$7.50; Wrought Turnings, \$10; Axle Turnings, \$12.50; Mixed Steel, \$11; Coil Steel, \$14; Leaf Steel, \$15; Tires, \$15.

Metals.—Copper is firm at the advance, and inquiries are coming in for future delivery. Carload lots of Lake are quoted at 13¢ and casting brands 12½¢ @ 12¾¢. Spelter is unchanged at 4.85¢ @ 4.95¢ for prime Western. Manufacturers are well sold up. Dealers here report that trade in Pig Lead has been very satisfactory during the past week. Values at all the centers have held their own, and consumption still continues large, which is evidenced by total absence of stocks of Lead outside of New York. The position of the metal is a strong one and well worth watching carefully. Values here have been very strong at 4½¢, with transactions of some 700 tons

spot and near-by delivery. The average price of Lead in Chicago for September was 4.35¢.

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fourth and Main Sts.,
CINCINNATI, October 6, 1891.

Pig Iron.—The week ending to day has been a quiet one, and, following one of much activity, makes it seem unusually dull by contrast, but there have been inquiries for considerable quantities of various kinds of Iron, which are likely to develop into trade at an early day. The outlook is so promising that it has attracted the attention of speculators, who are making inquiries for round lots of Iron, but the furnaces are not encouraging such disposition of it, and are indisposed to name price, as experience proves that such Iron is generally thrown on the market when it is least desired, to the detriment of the trade in general. While no large transactions have taken place this week, numerous small sales have been made of one to five carloads for current consumption, which in the aggregate make a fair volume of business. There are still some lots of Iron which can be bought at prices which have prevailed, but as a rule the furnaces refuse to sell unless at higher rates, and while there is no quotable advance in prices for this year's delivery, it is becoming more difficult to secure round lots of Iron for later delivery except at materially higher prices. Some of the furnaces are limiting prices even for early delivery at 25¢ advance, and for some grades even more than this, but the education of buyers up to that point is necessarily a slow process, and while all admit its probability at some time, the logic of the situation indicates that it must be well into next year and possibly the latter half of it.

Foundry.

Southern Coke, No. 1.....	\$14.75 @	\$15.00
Southern Coke, No. 2.....	13.50 @	13.75
Southern Coke, No. 3.....	13.00 @	13.25
Ohio Soft Stone Coal, No. 1.....	16.50 @	17.00
Ohio Soft Stone Coal, No. 2.....	15.50 @	16.50
Mahoning and Shenango Valley.....	17.00 @	17.50
Hanging Rock Charcoal, No. 1.....	20.00 @	21.00
Hanging Rock Charcoal, No. 2.....	19.00 @	20.00
Tennessee and Alabama Charcoal, No. 1.....	16.00 @	17.00
Tennessee and Alabama Charcoal, No. 2.....	15.00 @	16.00

Forge.

Gray Forge	12.50 @	12.75
Mottled Neutral Coke.....	12.00 @	12.25

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	19.25 @	19.75
Hanging Rock, Cold Blast.....	25.00 @	26.00
Lake Superior Car Wheel and Mal- leable.....	18.00 @	18.50

St. Louis.

OFFICE OF *The Iron Age*, 214 N. Sixth st.,
ST. LOUIS, October 5, 1891.

Pig Iron.—The market continues to gain in strength—slowly, it is true, but nevertheless steady. Buying is limited to moderate quantities for delivery during the balance of the year. There is no increase in stocks, and it is quite apparent that furnaces are pretty well sold up, notwithstanding the fact that the demand has been only moderately active during the past six months. Furnacemen are not pushing the sale of their output to any extent, and it is presumed that the present prices are not high enough to meet their views. The local demand indicates that a steady trade is enjoyed by the different manufacturers. Car-Wheel Irons are improving as the prospect for railroad work becomes bright. Consumers remain somewhat indifferent, and are apparently not putting much faith in any early advance in prices, while, as stated above, furnacemen take the opposite view. In view of these circumstances, there is no large buying, and a hand-to-mouth business has to

be noted. For ordinary quantities, this year's delivery, we quote as follows, f.o.b. cash St. Louis:

Southern Coke, No. 1 Foundry, \$15.50 @ \$15.75	
Southern Coke, No. 2 Foundry, 14.50 @ 14.75	
Southern Coke, No. 3 Foundry, 13.75 @ 14.00	
Gray Forge..... 13.25 @ 13.50	
Southern Charcoal, No. 1 Foundry..... 17.00 @ 17.50	
Southern Charcoal, No. 2 Foundry..... 16.50 @ 16.75	
Missouri Charcoal, No. 1 Foundry..... 15.50 @ 16.00	
Missouri Charcoal, No. 2 Foundry..... 15.00 @ 15.50	
Ohio Softeners..... 17.75 @ 18.75	

Bar Iron.—A large business in small lots is reported at current rates. Railroads are a trifle slow in closing arrangements for work which they have in contemplation, and Bar mills are becoming anxious at the delay. It is expected, however, that a number of deals which are pending will shortly be closed, and mills will then have no further cause for complaint. Car lots from mill are quoted at 1.72½¢ @ 1.77½¢. Small lots from store at 1.85¢ @ 1.90¢, according to quantity.

Barb Wire.—Business continues moderately active. The decline which went into effect October 1 has stimulated trade, and mills are now well employed. The Columbia Patent Company make the following prices: Painted, 2.70¢; Galvanized, 3.20¢. Terms, 60 days, or 3% discount for cash in ten days.

Wire Nails.—There is no change to note either in price or demand. There is nothing in the immediate future to justify any advance, and the prices at present ruling are likely to be maintained. We quote as follows: Carload lots, \$2.10; small lots from store, \$2.25.

(By Telegraph.)

Metals.—Sales of Pig Lead have been limited during the past week. There is an undertone of strength that is daily becoming more forcible, and 4.35¢ is now considered an inside price. Single carload lots for spot delivery would command 4.37½¢. Spelter continues to improve, stocks on hand are light, and none of the furnaces have any surplus to draw from. One furnace refuses to quote on December delivery, and several others are not willing to quote beyond the end of the year. Sales during the past week were made at 4.75¢. The feeling that higher prices will shortly prevail predominates, and indications certainly point that way.

Louisville.

LOUISVILLE, KY., October 5, 1891.

Pig Iron.—The market has been quite active the past week, though no specially large transactions have been reported, and the majority of sales have been in 100 to 1000 ton lots, largely for delivery during the balance of this year. There is a good demand from all lines, and it seems to be pretty generally distributed throughout the country. In many instances the inquiry is for delivery during four to six months of next year. While some furnaces are well sold up for the remainder of this year, and have withdrawn from the market, believing that the outlook does not justify their accepting sales at prices buyers are willing to pay for delivery next year, others are taking orders at prevailing prices for delivery through the next three months, and are willing to consider offers at 25¢ to 50¢ advance for delivery during the earlier part of 1892, feeling that it is not wise to try to force up prices, but rather let the advance be a gradual and natural one. Stocks in the hands of the larger portion of furnaces are rather light and, Gray Forge for this

year's delivery rather difficult to obtain, the output being pretty well sold up. We quote for cash, cars Louisville:

Southern Coke, No. 1 Foundry...	\$14.50 @	\$15.00
Southern Coke, No. 2 Foundry...	13.75 @	14.25
Southern Coke, No. 3 Foundry...	13.25 @	13.75
Southern Coke, Gray Forge.....	12.75 @	13.25
Southern Charcoal, No. 1 Foundry	16.00 @	17.00
Southern Car Wheel.....	18.50 @	20.00

Cleveland.

CLEVELAND, October 5, 1891.

Iron Ore.—Much new life has been infused into the market by the reduction in lake freights. It is probable that 600,000 or 700,000 tons of Ore are needed to complete the stocks of the furnacemen in the valleys and east of the Alleghenies. It is now an established fact that only moderate advances over early season quotations will be obtained for these late sales. Every effort was made to force the Escanaba rate to \$1.25 ¢ ton, making necessary large advances in the cost of Ore. The steadily maintained determination of the buyers to pay no fancy prices for Ore while Iron is being manufactured at little or no profit prevented this increase in freight charges. Instead, buyers left the market so completely alone that rates began to tumble, and 90¢ @ 95¢ ¢ ton is all that is paid from Escanaba to-day, with the Marquette and Ashland rates correspondingly reduced. The efforts of the Ore men to get the year's output before navigation closes has resulted in receipts at lower lake ports during the past week of over 210,000 tons of new Ore, against about 165,000 tons for the corresponding week in 1890. Local receipts were 80,000 tons, as compared with 62,000 for the same week last year. Navigation will close with only a trifling amount of unsold Ore on the docks; indeed, very little is being forwarded at all beyond the quantity already contracted for. A few dealers assert that owing to the reduced cost of transportation they have sold some Ore during the past week—principally non-Bessemer—the price paid being about \$3.80 @ \$4.10, f.o.b. cars lower lake ports. Other dealers say they have not yet realized the effect of the change in vessel rates, but expect to. Iron men will certainly watch the market for the next few weeks with interest.

Pig Iron.—Buyers are making energetic efforts to make purchases for future delivery, but with only limited success. Consumption seems gaining on production, a fact that encourages dealers in the belief that the market will soon brighten up in every particular. Many furnacemen say they are so well sold ahead that they do not care to consider inquiries. Foundry Irons are evidently gaining in favor. It can be said that the market is firmer in every way, and that better prices seem likely to be obtained during the present month. Strictly local quotations are as follows:

Nos. 1 to 6 Lake Superior Charcoal	\$18.50 @	\$19.00
Nos. 1, 2 and 3 Bessemer, per ton..	16.00 @	16.25
No. 1 Strong Foundry, per ton..	16.20 @	16.70
No. 2 Strong Foundry, per ton..	15.20 @	15.70
No. 1 American Scotch, per ton..	16.20 @	16.70
No. 2 American Scotch, per ton..	15.20 @	15.70
No. 1 Soft Silvery, per ton.....	16.50 @	17.50
Mahoning and Shenango Valley Neutral Mill Irons, per ton....	14.00 @	14.50
Mahoning and Shenango Valley Red Short Mills, per ton.....	14.00 @	14.50

Old Rails.—One sale of a small lot of Old Americans at \$23.50 is reported, but the demand is somewhat limited and business is not very brisk.

Manufactured Iron.—Bar Iron is still in very strong demand, although many of the mills are too busy to consider inquiries at all, having all they can do up to the beginning of next year. Structural Iron is in excellent favor by reason of the immense number of improvements now under way in the city.

Scrap.—The demand is fairly good for all kinds of Scrap on the basis of \$19 @ \$19.25 for No. 1 Railroad Wrought.

Nails.—The market is unchanged, although the demand for Steel Wire Nails at \$2 seems unusually heavy.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., October 6, 1891.

Pig Iron.—The market holds pretty firm, but has not gained anything during the past week. Consumers bought heavily some little time ago, and as the majority of them have provided for their early requirements, there is no inducement to continue buying at higher prices. This would be the inevitable result if orders were forced on unwilling sellers, but as there is no disposition to do this the market may be said to be in a state of hesitancy. That is to say, if buyers keep on taking Iron at the rate they have done the past two or three weeks, holders will be in a position to command a slight advance. The chances are, however, that there will be a pause for a little while, until the true inwardness of things is more fully developed. The key to the position seems to be in Steel Rails. If the Rail mills get busy there need be no hesitancy in regard to the course of the market, but so long as they are indifferently employed it will be difficult, if not impossible, to lift things out of the rut in which they have been for nearly a year past. It is not necessary to go into any argument on this point further than to say that besides the extra demand for Pig Iron, there would be less competition with Muck Bars and with Merchant Iron in its various shapes. The advance in Steel would stimulate the prices of Iron, and in fact the entire trade would feel it from center to circumference. How soon or how long before the Steel mills get busy is entirely problematical. The delay in placing orders has not only been a disappointment but a surprise to even the best informed men; and while everybody feels sure that the demand must come, and that it must be the largest the trade has ever known, no one dare venture an opinion as to when it will begin. This explains the general hesitancy in regard to new transactions. If not expressed in so many words, the feeling is that "we are waiting for something to turn up," and that something is undoubtedly the demand for Steel Rails. Meanwhile sales of Pig Iron have been made at about the following prices, varying according to brand, point of delivery, &c.:

Ohio Softeners, No. 1x.....	\$19.00 @
Ohio Softeners, No. 2x.....	18.00 @
Standard Penna., No. 1x.....	18.00 @	\$18.25
Standard Penna., No. 2x.....	16.25 @	16.75
Medium Penna., No. 1x.....	17.50 @	17.75
Medium Penna., No. 2x.....	16.00 @	16.25
Virginia, No. 1x.....	17.00 @	17.25
Virginia, No. 2x.....	15.75 @	16.00
Standard Neutral All-Orde Forge	14.50 @	15.00
Ordinary Forge Cinder mixed	13.75 @	14.00
Hot-Blast Charcoal.....	20.00 @	22.00
Cold-Blast Charcoal.....	24.00 @	27.00

Ferromanganese.—Business is said to have been done at less than \$64, duty paid, for 80 %, although the nominal quotation is \$64.50. Actual selling prices said to be \$63.50 @ \$63.75.

Steel Slabs and Billets.—The market is very weak and for early deliveries buyers seem to make their own prices. Some large transactions are reported at prices varying from \$27.25 @ \$27.50 at tide or equivalent points and \$26.50 @ \$27 at Harrisburg. Sellers are quoting somewhat higher prices to day, but on firm offers for this year's deliveries there would be no difficulty in placing orders at inside figures for Nail Slabs and possibly for Billets, although there is usually a difference of about 25¢ per ton between the two.

Steel Rails.—A little more business is reported, but there is nothing that can be construed into general activity. Several

lots of 4000 tons each have recently been taken by the Lackawanna, Pennsylvania Steel and the Cambria companies, all at the usual prices. A larger business could be done if the buyers had cash in hand, failing which sales are somewhat restricted, although the outlook is believed to be improving.

Muck Bars.—Demand very disappointing. Some makes are held at from \$27 to \$27.20, delivered, while others would be glad to get \$26.50 @ \$26.75; all depends on where they are, what they are and who wants them. One or two small lots taken at \$26.75 @ \$27, delivered, although there are liberal offerings at the lower figures named.

Bar Iron.—Market dull and unchanged. Mills are moderately well employed, and are taking in orders which about balance deliveries, so that they maintain their position without getting anything ahead. There is a good deal of confidence in regard to the ultimate outcome, however, although buyers still confine themselves to covering their immediate requirements. Prices steady at \$1.70 @ \$1.75 for city deliveries, and \$1.60 @ \$1.65 at interior points.

Plates.—There is very little change to note in this department. Mills are kept fairly well employed on current orders, but there is nothing large on the market, so that manufacturers are doing little more than holding their own; they have certainly not accumulated orders recently. Prices under such conditions cannot improve, but they are already so low that there is no room for a decline. Nominal quotations are about as follows, but there is considerable irregularity, especially on what are considered desirable orders:

	Iron.	Steel.
Tank Plates.....	1.90 @ 2.00¢	2.00 @ 2.10¢
Refined.....	2.20 @ 2.30¢	2.10 @ 2.20¢
Shell.....	2.30 @ 2.40¢	2.40 @ 2.50¢
Flange.....	3.20 @ 3.30¢	2.50 @ 2.75¢
Fire-Box.....	4.00 @ 4.25¢	3.00 @ 3.50¢

Structural Material.—Nothing of special importance in this department. Mills are moderately employed on old orders, with a fair sprinkling of new business, but nothing more than the usual run of business can be reported at present. Prices unchanged as follows: Angles, 2.05¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.05¢, and 10¢ @ 15¢ more for Steel, according to requirements. Tees, 2.5¢ @ 2.6¢; Beams and Channels, 3.1¢ for either Iron or Steel.

Sheet Iron.—A good demand is reported for all descriptions, but without material change in prices. Galvanized Sheets are ridiculously low, and while some quote 70 @ 72½ % discount and upward, others refuse to accept business at over 67½ @ 70 %.

Best Refined, Nos. 14 to 20.....	3.00¢ @ 3.10¢
Best Refined, Nos. 21 to 24.....	3.10¢ @
Best Refined, Nos. 25 to 26.....	3.20¢ @ 3.30¢
Best Refined, No. 27.....	3.40¢ @
Best Refined, No. 28.....	3.50¢ @
Common, ½¢ less than the above.	
Best Soft Steel, Nos. 14 to 20.....	3¢ @ 3¼¢
Best Soft Steel, Nos. 21 to 24.....	3¼¢ @
Best Soft Steel, Nos. 25 to 26.....	4¢ @
Best Soft Steel, Nos. 27 to 28.....	4¢ @
Best Bloom Sheets, ½¢ extra over the above prices.	
Best Bloom, Galvanized, discount....	@ 67½ %
Common, discount.....	@ 70 %

Old Material.—There is a little or no change in prices in this branch of the trade. Those who happened to want first-class material have to pay full quoted prices, while anything not strictly good stock can only be sold at concessions. The demand is a trifle better, however, and prices are about as follows: Iron Rails, \$21.50 @ \$23; Steel Rails, \$17 @ \$18, delivered; No. 1 Railroad Scrap, \$20.50 @ \$21, Philadelphia, or for deliveries at mills in the interior \$21 @ \$21.50, according to distance and quality; \$15 @ \$16 for No. 2 Light; \$14 @ \$15 for best Machinery Scrap; \$13.50 @ \$14 for ordinary; \$14.50

@ \$15.50 for Wrought Turnings; \$9.50 @ \$10.50 for Cast Borings, and nominally \$24 @ \$25 for Old Fish Plates, and \$16 @ \$17, delivered, for Old Car Wheels.

Wrought-Iron Pipe.—There are no official quotations at present, so that it is useless to present a list of discounts. It is understood, however, that the list recently in force is subject to extra discounts of from 5 % to 10 % according to the character of the order, but the rule is "quotations on application." For a convenient reference we continue the old list as follows:

Butt-Welded Black.....	52½ %
Butt-Welded Galvanized.....	42½ %
Lap-Welded Black.....	62½ %
Lap-Welded Galvanized.....	50 %
Boiler Tubes, 2½ inch and under.....	52½ %
Boiler Tubes, 3 to 6 inch.....	60 %
Boiler Tubes, 7 inch and larger.....	55 %

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, PITTSBURGH, October 6, 1891.

Pig Iron.—There has been a fair business the past week, but the market, contrary to general expectation, instead of growing stronger, appears, if anything, to be weaker, and no one appears to be able to assign a good reason therefor. Consumption appears to be keeping pace with production, and the mills are generally well supplied with orders for their products; yet in the face of all this there is evidently more Pig Iron than is wanted, otherwise this weakness which characterizes the market would not prevail. As noted in our report of last week, there is but little Iron being offered here from a distance, and it is evident, therefore, that city furnaces are chiefly meeting the demand, and the latter, in view of the fact that puddling furnaces are generally in full blast, is of no small proportion. This being the case, it is very evident that our city furnaces are turning out a good deal of Iron, and the fact that they are willing to sell not only for present but future delivery, would indicate that they do not have much faith in an advance soon. However, the market is sometimes very fickle and changes when least expected; but, be this as it may, the most of the business of late has been at inside quotations. We quote prices as follows:

Neutral Gray Forge.....	\$13.75 @ \$14.00, cash.
All-Orde Mill.....	14.50 @ 15.00, "
White and Mottled.....	13.00 @ 13.50, "
No. 1 Foundry.....	16.25 @ 16.50, "
No. 2 Foundry.....	15.25 @ 15.50, "
No. 3 Foundry.....	14.50 @ 15.00, "
No. 2 Charcoal Foundry.....	21.00 @ 21.50, "
Cold-Blast Charcoal.....	25.00 @ 27.00, "
Bessemer Iron.....	15.50 @ 16.00, "

Included in the sales reported was a lot of 2500 tons Gray Forge (made by a city) at \$13.75 cash; 2000 tons do. at \$13.85, and some small lots of open mill at \$14.35 @ \$14.50; all the sales of Bessemer reported were at \$15.50 cash.

Muck Bar.—Continues dull and prices are weaker than a few weeks ago, with more offering and less inquiry. Sales of some 2000 tons at \$26.25 @ \$26.50. Trade is disappointing. There is not the demand expected, which is attributed in large part to the unsatisfactory condition of the Pipe trade, as those mills making Pipe Iron are the largest buyers of Muck, and especially at this season of the year.

Manufactured Iron.—There is a continued demand for all kinds of Manufactured Iron, and the mills not only here but in the Shenango and Mahoning valley districts continue very busy indeed. As noted in our report of last week, it is difficult to find a mill in condition to take an order of any consequence for immediate or even near-by delivery. In addition to the regular Merchant Iron trade, there is an unusually good demand for all leading specialties. However, notwithstanding the ac-

tivity noted, there has been no quotable or general advance in prices, although, of course, they are firmer, and outside quotations are generally demanded. We continue to quote Bars at 1.70¢ @ 1.75¢; Plate and Tank Iron, 2.05¢ @ 2.10¢, and No. 24 Sheet 2.75¢, all 60 days, 2% off for cash. There is a continued fair demand for Skelp Iron, with sales of Grooved at 1.70¢ @ 1.72½¢, and Sheared at 1.87½¢ @ 1.92½¢, four months, 2% off for cash. Narrow Grooved appears to be more in demand than any other kind.

Structural Material.—The activity noted for some time past continues, and while possibly there is not so much new business, manufacturers are all busy with old contracts, as they usually are at this particular time, when contractors are in a hurry to get all the work they can do before the bad weather sets in. Prices firm, but unchanged, as follows: Channels and Beams, 3.10¢; Steel Sheared Bridge Plates, 2.15¢ @ 2.20¢; Universal Mill Plates, Iron, 2¢ @ 2.05¢; Angles, 2¢; Tees, 2.60¢; Refined Bars, 1.80¢ @ 1.85¢.

Steel Plates.—There has been rather more inquiry the past week, chiefly from boilermakers, who report business as improving, and it is expected that there will be an improved demand before long from builders of lake vessels, who are large consumers. Prices remain unchanged, as follows: Fire Box, 3.85¢ @ 4.25¢; Tank, 2.05¢ @ 2.10¢; Shell, 2.15¢; Flange, 2.40¢ @ 2.50¢.

Merchant Steel.—There is an increasing demand reported, but prices remain unchanged. In regard to Crucible Tool Steel, while we continue to quote at 6¼¢ @ 7¢, there are some brands held considerably higher, but the great bulk of the business is at the prices quoted. Crucible Spring Steel, 4¢; do. Machinery, 4¼¢ @ 5¢; Bessemer Machinery, 2.30¢ @ 2.40¢; Toe Calk, 2.40¢ @ 2.50¢; Tire Steel, 2.20¢; Steel Bars, 1.80¢ @ 1.85¢. As noted in our report some weeks ago, there is a steadily increasing demand for Steel Bars.

Ferromanganese.—We can report regular sales of 80% domestic at \$66.50, cash, which is lower than foreign can be laid down here, and there is little or none of the latter being sold in this market.

Nails.—Increasing demand reported for Cut Nails, and with a scant supply and light production, the market is reported firm at \$1.60 for 30¢ average, 60 days, 2% off for cash. Wire Nails are still reported slow, with price unchanged at \$1.85, f.o.b. at factory, 60 days, 2% off for cash. It is claimed that there is little or no margin for profit at the price quoted.

Railway Track Supplies.—There is an active demand for everything in this line. Jones & Laughlins report that they have been pressed to their utmost capacity for some considerable time past. Prices, with the exception of Bolts, which are a shade lower, remain unchanged. Spikes, 2.10¢ @ 2.15¢, 30 days, f.o.b. at factory; Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2.70¢ with Square and 2.80¢ with Hexagon Nuts.

Wire Rods.—There have been no sales reported for a couple of weeks, in the absence of which we continue to quote at \$35, f.o.b. at makers' mill, at which the last sale was reported. All three of the mills here are consumers as well as producers, and not infrequently buyers as well as sellers.

Billets and Slabs.—There appears to be no abatement in the demand, and the mills are well sold ahead. Sales at \$25 cash, f.o.b. at maker's mill, for round lots, and 25¢ @ 50¢ per ton additional for smaller lots. Included in the sales reported was a lot of 3000 tons for October, November and December at \$25, f.o.b. at maker's mill.

Old Rails.—There is still considerable inquiry for Iron Rails, with sales at \$24, which is now regarded as the ruling price, and there are but few offering.

Steel Rails.—Fair business and price firm at \$30, f.o.b. at mill, Pittsburgh. The Edgar Thomson Mill is working up to its full capacity.

Wrought Iron Pipe.—At the regular monthly meeting of the Manufacturers' Association in this city last Wednesday, prices were changed somewhat. Discounts are now quoted at 67½% on Black Lap Weld and 55% on Galvanized do.; on Black Butt Welded, 57½%; on Galvanized do., 47½%. There is a very fair and increasing demand for small Pipe, but the larger sizes are still reported slow.

Barb Wire.—Is still quoted at \$3 for Galvanized and \$2.50 for Painted, in car lots at factory. Less than a carload, 5¢ per 100 lb more.

Old Material.—There is a moderate business at unchanged prices. Sales of No. 1 Wrought Railroad at \$19.50 net ton; Cast Scrap, \$13.50 @ \$13.75, gross; Hammered Iron Axles, \$28, net ton; Steel Beam and Rail Ends, \$17 @ \$18, gross.

Detroit.

WILLIAM F. JARVIS & Co., Detroit, Mich., under date October 5, 1891, say: While there have been no notably large transactions in our local market during the past week, there has been a healthy, steady trading in nearly every grade of Iron in fair-sized lots, and usually for prompt delivery. An unusually large inquiry is seen for Lake Superior Charcoal, chiefly from Eastern points. This practically means, however, the usual purchasing done during October and November, whereby lake transportation may be taken advantage of. The carriers have asked some sharp advances in lake rates, which necessitates higher figures at the regular Lake Erie delivery ports. Certain large Car-Wheel makers, too, are investigating the market, with a view of getting monthly deliveries during 1892, but with the brighter outlook it will be hard work to close for any considerable amounts for delivery further than January to March, except upon a higher plane than our present quotations. Altogether the trade is much more satisfactory, both in price and volume. The market is firm. Some advances are being obtained, but this entirely depends upon the time of delivery asked. We repeat quotations of last week:

Lake Superior Charcoal, all numbers	\$18.00 @ \$18.50
Lake Superior Coke, Bessemer	17.75 @ 18.50
Ohio Blackband (40 per cent.)	18.00 @ 18.50
Lake Superior Coke Foundry, all ore	17.50 @ 18.00
Southern No. 1	16.25 @ 16.50
Southern Gray Forge	14.00 @ 14.50
Jackson County (Ohio) Silvery	18.25 @ 18.75

Coal Market.

The Anthracite Coal trade, despite the bull tone usually assumed by interested persons when speaking of the market, remains heavy and dull, indicating the expected autumn activity only in a faint degree. The course of the market for the season and the actual situation at the present time may be inferred from the simple statement that consumers bought largely at May prices, not quite so much at June prices, still less at July prices and little or none at September prices, while the October circular is "away out of sight"—far ahead of the market. As a qualifying remark it may be added that there have been no sales at September prices, unless in cases where the necessity was imperative. The effect of the recent advances, therefore, appears to be to keep off business. At least this is the view entertained by prominent operators, who, to a certain

extent, dissent from the policy of the associated companies. Speaking more particularly of outside operators, it may be said that individuals are selling Stove Coal at \$4, f.o.b., which is 25¢ below the companies' September circular prices, and even less has been accepted. Steam Coal is dull and unchanged. Of course fancy Coals are on an independent basis and sell much above the current average.

Representatives of the Reading Railroad, Lehigh Valley Railroad, Lehigh Navigation Company, Pennsylvania Railroad and the larger individual operators in the Lehigh and Schuylkill regions last week agreed to make the following advances in the prices for Anthracite, to take effect on October 1: Broken, 5¢ per ton; Egg, 10¢, and Stove and Chestnut, 20¢.

The production for the past week was 767,068 tons; total for the year, 27,825,293 tons; increase over last year, 2,768,489 tons. The Pennsylvania Railroad tonnage for the week was in Coal 252,996 tons and in Coke 101,485 tons; Reading tonnage, 265,000 tons; Norfolk and Western tonnage for the week, 53,062 tons; Beach Creek, 71,134 tons; Chesapeake and Ohio, 49,289 tons.

The approaching completion of the Hazleton branch railroad, between Lofty and Hazleton, has again started rumors that the Reading Railroad management intends erecting a railroad around Reading, for the transmission of its Coal traffic alone. When this branch is finished, the coal shipments from Coxe Brothers' mines will go over this road, and thence over the main line to tide water.

A Philadelphia circular says, the drawing to determine miners' wages showed that the Schuylkill (Reading) region is only 7 points below the basis, as against 9 points below last year. The basis is \$2.50 per ton, and a point is 3¢. In other words, the Reading received about 6¢ per ton more for Coal than last September.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, October 7, 1891.

American Pig.—The market continues steady, buyers taking fair amounts, without, however, showing any inclination to purchase beyond this year. One leading seller in this market reports the sale of a block of 6000 tons. Some business has been done also in Bessemer Pig. Northern brands are quoted at \$16.75 @ \$18 for No. 1; \$16 @ \$16.50 for No. 2, and \$14 @ \$14.50 for Gray Forge. Southern Irons sell at \$16 @ \$17 for No. 1; \$15.25 @ \$16 for No. 2; \$15.50 @ \$16 for No. 1 Soft, and \$14 @ \$14.50 for Gray Forge.

Spiegeleisen and Ferromanganese.—Importers report that there has been an advance of 3/ in the foreign prices of Spiegeleisen, the German makers having taken the lead, followed by the English producers. We quote \$27.50 @ \$28 for German and English, with no business of magnitude to report. The agents of foreign Ferromanganese producers claim that they have instructions not to cut the tidewater price of \$64.50, but the feeling is that that price can be shaded in some manner. From Pittsburgh come reports that domestic has been offered at \$66.

Billets and Rods.—This market is quiet for both lines, and nothing is doing in foreign Billets, which are quoted \$31 @ \$31.50. Domestic Rods are \$37.50 @ \$38, tidewater.

Swedish Stock.—We note sales of River Rods, 1892 delivery, at \$57; Bars, jobbers' specifications, may be quoted \$66 @ \$67.

Manufactured Iron and Steel.—The bids on the McComb's Dam Bridge will be opened to-day. The structure will take a

considerable quantity of Plates. In Bars a slight advance has been secured by some mills for round lots. We continue to quote: Angles, 1.90¢ @ 2.10¢; Sheared Plates, 1.95¢ @ 2.25¢; Tees, 2.45¢ @ 2.75¢, and Beams and Channels, 3.1¢, on dock. Steel Plates are 1.95¢ @ 2.15¢ for Tank; 2.20¢ @ 2.30¢ for Shell; 2.45¢ @ 2.65¢ for Flange; 2.65¢ @ 2.75¢ for Marine, and 3¢ @ 3.25¢ for Fire Box, on dock. Bars are 1.7¢ @ 1.9¢, on dock. Scrap Axles are quotable at 2.15¢ @ 2.20¢, delivered. Steel Axles, 2.15¢ @ 2.25¢, and Links and Pins, 2.15¢ @ 2.20¢.

Steel Rails.—The market continues very quiet, neither Eastern nor Pittsburgh mills having taken any business of consequence. A 3000-ton lot of Rails, for which a railroad in this vicinity was in the market, has been withdrawn. The price continues steady at \$30.80, tidewater.

Track Material.—We quote 2.15¢ @ 2.25¢ for Spikes, 1.75¢ @ 1.90¢ for Fish Plates, and 2.80¢ @ 3¢ for Bolts, delivered.

Merchant Steel.—We quote Hot-Rolled Shafting 2.05¢ @ 2.10¢; Machinery, 2.15¢ @ 2.25¢; Tire, 2.20¢ @ 2.25¢, and Toe Calk, 2.25¢ @ 2.30¢, delivered.

Old Material.—Aside from small lots of Old Iron Rails at \$21, Jersey City, there has been no business.

Warrant Stocks.—The American Pig-Iron Storage Warrant Company report as follows:

	Tons.
Stock in yard, September 11, 1891.....	43,200
Put in yard for 19 days ending September 30, 1891.....	800
Total.....	44,000
Withdrawn 19 days ending September 30, 1891.....	600
Net stock in yard, September 30, 1891....	43,400

Metal Market.

Copper.—The market is somewhat unsettled at the present time. Reports to the effect that the Anaconda Company will resume operations this month seem to have slightly alarmed some sellers who were latterly rather strong on the "bull" side, and the very indifferent manner in which offers have been treated by most consumers, to say nothing of the downward movement in values in London, due partly to opening of Chili mines, has had more or less unfavorable bearing. In some quarters contracts covering several million pounds for delivery up to the first half of December were said to have been placed at 12.40¢ @ 12½¢, but elsewhere sales to a very fair amount at 12½¢ were reported, and as low as 12.35¢ was said to have been accepted in exceptional instances. There are faint indications that an interest representing a number of producers is not in harmony with jobbers or all consumers. It should also appear that there is a little rivalry between that firm, the leading producer and a few others that maintain their individuality. That jobbers have been placed at some disadvantage by the methods of the first-named interest is no secret, but whether the circumstance is in any manner accountable for the recent retrogressive movement in values is uncertain. The surface indications are that concentrating the business of selling agent and jobber has more or less adverse bearing, indirectly at least. Arizona Ingot is in limited demand at the moment, but, with rather light supply on offer, prices are quite firmly held at 12¢ upward for prompt deliveries. In casting Copper there has been very little movement and consumers hold aloof as much as possible pending the effect of the reported resumption of work at the Anaconda mines.

The nominal price is 11½¢ for ordinary brands.

Tin.—Speculation has been on a moderate scale and chiefly in contracts under which sellers enjoy the right to double or treble the amount of their original sale. In other words, the dealings were practically in the shape of "puts" that have given the "bull" interest a certain advantage, in the face of their large holdings, for some time past. Outside of this speculative deal the movement continues spiritless. Jobbers are buying only as immediate wants necessitate, and the consumptive movement, to all accounts, is barely up to the average volume. Net cash prices at the close were 20.10¢ for prompt and the same for November delivery. Jobbing parcels sold at 20.20¢ @ 20.35¢ regular out of store.

Pig Lead.—Business has been of very moderate proportions and the demand slow, with little call for more than single carload lots. Supplies are not offered with any greater freedom at the present time than they were a week ago, however, and 4.52½¢ @ 4.55¢ stands as apparent market value.

Spelter.—Transactions have been chiefly in single carload lots and few at that. The demand has been very tame as well, with very few bids above 5¢ for prime Western. Sellers stand firmly at 5.10¢ for shipments, however, and it is claimed that the output of the more desirable brands is well sold up.

Antimony.—Prices have undergone a further advance, and the market is firm with demand very fair. Hallett's is quoted at 10½¢, L.X at 11½¢, L. J. & C. at 11½¢ and Cookson's at 13¢, in wholesale quantities.

Tin Plate.—Business has been slow. Spot goods are taken only as immediate necessities may require, and about the only purchases are by canners who do a large export business and secure a refund of duty. Charcoals and Terns are scarce and bring prices equal to cost of importation, but Cokes are still relatively lower here than in Europe. We quote: Coke Tins—Penlan grade, IC, 14 x 20, \$5.35; J. B. grade, do., \$5.45; Bessemer do., \$5.40; Siemens Steel, \$5.50; Stamping Plates—Bessemer Steel, Coke finish, IC basis, \$5.75; Siemens Steel, IC basis, \$5.85 @ \$6; IX basis, \$6.85 @ \$7. IC Charcoals—Melyn grade, \$6.50; for each additional X add \$1.50; Allaway grade, \$5.85; Grange grade, \$5.90 @ \$5.95; for each additional X add \$1. Charcoal Terns—Worcester, 14 x 20, \$5.70; do., 20 x 28, \$11.50; M. F., 14 x 20, \$7.50; do., 20 x 28, \$15.50; Dean, 14 x 20, \$5.40; do., 20 x 28, \$10.60; D. R. D. grade, 14 x 20, \$5.25; do., 20 x 28, \$10; Mansel, 14 x 20, \$5.30; do., 20 x 28, \$10.25; Alyn, 14 x 20, \$5.35; do., 20 x 28, \$10.35; Dyffryn, 14 x 20, scarce; do., 20 x 28, \$11.20. Wasters—S. T. P. grade, 14 x 20, \$4.90; do., 20 x 28, \$9.85; Abercarne grade, 14 x 20, \$4.90; do., 20 x 28, \$9.65.

New York Metal Exchange.

The following sales are reported :

THURSDAY, October 1.	
25 tons Tin, November.....	20.05¢
(Seller's right to double.)	
20 tons Tin, November.....	20.00¢
(Seller's right to treble.)	
10 tons Tin, cash to-day.....	20.05¢
10 tons Tin, cash to-day.....	20.02½¢
FRIDAY, October 2.	
20 tons Tin, November.....	20.15¢
MONDAY, October 5.	
25 tons Tin, Oct.-Nov., buyer's option..	20.30¢

Financial.

Despite the drawbacks occasioned by unseasonably hot weather, the indications are that business is beginning to respond to the more prosperous condition of agriculture in all parts of the country. For the time being there is less buoyancy in cereals, owing to the overstocked condition of foreign markets and the freedom with which grain is coming from India and Russia, amounting to over 5,000,000 bushels last week, the effect being to check the foreign demand. Cables generally were weaker, with orders showing reduced limits. Wheat and corn were both lower in this market, but the effect upon speculation is salutary, especially in the admonition conveyed to those who would hold for a rise. Primary receipts last week were about 7,000,000 bushels, and the "visible supply" showed a tendency to accumulate. In the Dakotas there is a scarcity of farm labor and machinery to secure the big crop. Wall street is encouraged by renewed orders from London for American securities, also by improved railroad earnings and continued arrivals of gold, which comes with unexpected freedom, lessening the probability of tight money. Another view is that this gold movement will make firmer money abroad and deprive the market of foreign support. On Monday \$3,000,000 of gold arrived at this port, making a total import since September 12 of \$12,250,000, and \$3,300,000 more are afloat.

The London *Statist* says: "In round figures the Bank of England holds about 25½ millions sterling in gold, the Bank of France about 53½ millions, and the Imperial Bank of Germany about 37 millions sterling, or about 116 millions sterling in all. The three institutions, it is safe to say, can part with 16 millions sterling without danger to the European markets.

In order to encourage the importation of gold the Treasury Department resolved to give importers spot cash for it as soon as received at the Assay Office, instead of requiring them to wait while it is being assayed. The trend of public sentiment appears in the action of the New York Chamber of Commerce, which adopted a resolution declaring that "the existing law compelling the purchase by the Government of 4,500,000 ounces of silver per month is against the public welfare and should be repealed." A senseless run on the savings banks in Ulster County was occasioned by the robbing of a savings institution in Kingston and alleged falsification of accounts. The deficit is reported to be about \$500,000. The First National Bank of Clearfield, Pa., suspended, also the Phillipsburg Bank; liabilities, \$380,000. A Treasury statement shows that the maturing 4½% bonds were provided for without disturbance or discredit. One important consequence is an increase during September of \$24,550,000 in the volume of available currency. The volume of circulation is now larger than at any time before, having increased during the last 12 months \$32,609,327, notwithstanding the large exports of gold. At the same time the prejudicial operation of the Silver act of 1890 is apparent in various ways. Railroad tariffs are more disturbed. The eastbound rate situation is supposed to have been adjusted a few days ago, but with the Trunk Line and Central Traffic associations resolutions to obey the rules and maintain rates have little binding effect. All-rail rates are said to be very unsteady. Exports from this port for the week were heavy, \$9,768,989.

Stocks were feverish and lower until Friday, influenced by disclosures in the case of the Missouri Pacific and rumors concerning Mr. Gould's physical condition. On Friday the market recovered. It was stated that while the Rock Island contemplated the issue of debenture bonds, only

\$3,000,000 would be sold within two years, in order to provide for much-needed improvements. On Monday prices tended lower, Union Pacific leading in the decline. One reason assigned for the heavy tone was that the London demand had been checked by dearer discounts and by the expectation that the bank rate would be advanced on Thursday.

United States bonds were quoted as follows:

U. S. 4½s. 1891, extended.....	99½
U. S. 4s. 1907, registered.....	116
U. S. 4s. 1907, coupon.....	116
U. S. currency 6s.....	110½

Bar silver closed in London at 44½d. 7/ ounce. The commercial price of bar silver in New York was 96½¢ 7/ ounce.

Money was active in consequence of the disturbance of loans incident to the October settlements. Loans on call averaged about 6%. Time loans were in good request; the ruling rate was 6% for all dates. Commercial paper was dull at full rates. The bank statement showed a loss of \$1,417,600 cash and of \$905,875 in surplus reserve, leaving the latter at \$3,102,750. Loans were contracted nearly \$2,000,000. The drain of currency to the interior was not so heavy. Next Saturday's statement will reflect more distinctly the gain from imports. In the West the market is favorable for borrowers. Foreign exchange was dull and lower, with nominal rates at \$4.80½ @ \$4.84.

The St. Paul Pioneer Press has prepared statements based on inquiry and investigation in Minnesota and in the two Dakotas, tending to show that the farm lands in the Northwest have appreciated in value \$200,000,000 since the close of the crop season of 1890. The increase in valuation is 10 to 50% and in some instances the value has doubled.

The annual report of the New York Produce Exchange for the year ended June 30, 1891, makes a large volume of over 500 pages, and shows that the members of the exchange handled in cash property during the year, grains, provisions, meats, naval stores, &c., to the amount of at least \$300,000,000. President Evan Thomas calls attention to this fact, and says: "When you consider that this immense value has been sold and that only three members have been posted for non-fulfillment of their contracts, it shows a commercial strength that the world has never equaled." The expenses for the year were decreased and the income increased, netting the exchange nearly \$13,000 over the previous year.

The statement of foreign commerce of the United States for August is very favorable and exceeds the most sanguine expectations. Instead of a balance of trade against this country of over \$4,000,000, as shown in the returns for August, 1890, we have a balance of over \$7,000,000 on the other side. And this does not consist of specie, as the imports and exports of coin and bullion about balance each other. The total exports for eight months are \$640,580,325; imports ditto, \$581,222,123; balance, over \$65,000,000.

Imports.

Hardware, Machinery, &c.

Botany Worsted Mills, Mach'y, cs., 21
Boker, Hermann & Co., Arms, cs., 24
Fox, W. B. & Bro., Guns, cs., 8
Friedham & Co., Ironware, cs., 25
Godfrey, Chas. J., Arms, cs., 21
Hemken, Hans, Steelware, cs., 2
Hartley & Graham, Guns, cs., 15
Lau, J. H. & Co., Arms, cs., 2
Pederson, G., Mach'y, cs., 3
Rotterdam S. S. Company, Arms, cs., 15
Rouss, C. B., Guns, cs., 7
Sanderson & Sons, Mach'y, cs. and pos., 16
Schoverling, Daly & Gales, Guns, cs., 25
Shutack & Binger, Pincers, case, 1
Union Chemical Works, Mach'y, pce., 1
Werlemann, H., Guns, cs., 18
Wiebusch & Hilger, Guns, cs., 14; Gun Barrels, cs., 10; Parts of Arms, cs., 3
Order—Mach'y, cs., 2; pce., 13

British Iron and Metal Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, October 7, 1891.

The market for Pig Iron Warrants has been quiet and prices have receded to 47/ for Scotch, 40/ for Cleveland and 49/1½ for Hematite. Stocks in warrant stores show little change, the total of Scotch Pigs being 500,000 tons and that of Cleveland 152,000 tons. Although more activity has been experienced in Finished Iron of late, interest in warrants is exceedingly tame and even an increase in the shipping demand for Hematite seems to have fallen flat. Latest sales of warrants were at 47/ for Scotch, 40/ @ 40/1½ for Cleveland and 50/ for Hematite.

The market for Pig Tin has been irregular, receding from £91. 17/6 to £91 under the influence of slow demand, subsequently recovering 10/ on the strength of reported decrease of 1000 tons in the visible supply, good deliveries last month and comparatively small Straits shipments. Any further considerable reduction in stocks, it is believed, would lead to a marked improvement in prices.

Copper prices have further receded, Merchant Bar prompts going as low as £50. 7/6. There is still an absence of active speculative interest, and consumers buy in an exceedingly careful manner. Sales of furnace material have been somewhat larger during the past fortnight, including 1380 tons Montana Matte at 10/. Arrivals of American Copper have been small. Chili charters for the fortnight estimated at 1000 tons. Stocks increased last month 145 tons.

Tin-Plate market continues quiet pending the quarterly meetings. Buyers stand aloof as though awaiting a break in prices, but makers are still firm in their ideas.

Scotch Pig Iron.—Business in makers brands is without improvement and prices are barely steady.

No. 1 Coltness, f.o.b. Glasgow.....	58/
No. 1 Summerlee, " ".....	57/
No. 1 Gartsherrie, " ".....	57/
No. 1 Langloan, " ".....	57/6
No. 1 Carnbroe, " ".....	48/6
No. 1 Shotts, " at Leith.....	59/
No. 1 Glengarnock, " Ardrossan.....	57/
No. 1 Dalmellington, " ".....	51/
No. 1 Eglinton, " ".....	51/

Steamer freights, Glasgow to New York, 2/; Liverpool to New York, 10/.

Cleveland Pig.—The market is slow, and prices are easier at 40/3 for No. 3 Middlesborough, f.o.b.

Bessemer Pig.—Demand is running light and values are weaker, with sellers at 50/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Spiegeleisen.—Dealings are still on a moderate scale, but prices are steady. English 20% quoted at 95/, f.o.b. shipping port.

Steel Rails.—The demand continues slow and sellers offer at somewhat lower prices. Heavy sections quoted £4 and light sections £4. 10/ @ £5, f.o.b. at N. W. England shipping point.

Steel Blooms.—Market dull and unchanged. Makers quote £4. 5/ for 7 x 7, f.o.b. at N. W. England shipping point.

Steel Billets.—Former prices asked, but market dull and rather weak. Bessemer, 2½ x 2½ inches, quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

Steel Slabs.—There is little doing and no change in maker's prices. Bessemer quoted at £4. 7/6, f.o.b. at N. W. England shipping point.

Old Iron Rails.—Demand has continued fair and prices are very steady. Tees quoted at £3 @ £3. 2/6 and Double Heads £3. 2/6 @ £3. 5/, f.o.b.

Scrap Iron.—The market is steady with demand fair. Heavy Wrought Iron quoted at £2. 10/ @ £2. 12/6, f.o.b.

Crop Ends.—There is no change in this line. Bessemer quoted at £2. 12/6 @ £2. 15/, f.o.b.

Tin Plate.—There is no change in the position of buyers or sellers, and business is slow. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade.....	15/6 @ 16/
IC Bessemer Steel, Coke finish.....	13/9 @
IC Siemens " ".....	14/ @
IC Coke, B. V. grade.....	13/6 @
Charcoal Terne, Dean grade.....	13/3 @ 13/6

Manufactured Iron.—Prices steady throughout, but business is less active than it was last week. We quote, f.o.b. Liverpool:

Staff, Marked Bars.....	£ s. d.	£ s. d.
Common.....	6 15 0 @	6 17 6
Staff, B's Sheet, singles.....	6 7 0 @	7 10 0
Welsh Bars (f.o.b. Wales).....	5 10 0 @	5 12 6

Pig Tin.—Market closes fairly firm, but rather quiet. Straits quoted at £91. 10/, @ £91. 12/6, spot, and £92. 2/6 @ £92. 5/ for three months' futures.

Copper.—The market depressed at the close, owing to heavy realizations. Merchant Bars quoted at £49. 15/ @ £50, spot, and £50. 10/ @ £50. 12/6 three months' futures. Best selected, £54. 10/.

Lead.—Demand moderate and market a shade weaker. We quote at £12. 2/6 for Soft Spanish.

Spelter.—Business slow and the market barely steady at £23. 12/6 for ordinary Silesian.

H. W. Hartman, president of the Hartman Mfg. Company of Beaver Falls, Pa., sailed for Europe on Wednesday the 7th inst., on a business and pleasure trip. Mr. Hartman will return on the same vessel, as his business interests in this country demand that he be absent as short time as possible.

About 800 miners employed in the railroad coal mines in the Pittsburgh district have gone out on a strike for an advance of from 3 to 3½ cents per bushel for mining coal. Several conferences were held last week at Pittsburgh between committees of the miners and operators, with a view of adjusting the differences, but without success. It is believed that the strike will be a prolonged one.

The Lambert & Bishop Company, at Joliet, have placed an order for 60 nail machines with A. R. Whitney & Co., making the total number 100.

During September the Calumet and Hecla Mining Company beat their best record, producing 4225 tons of "mineral," equal to about 2850 tons of fine copper.

The net profits of the five concerns in the Atlas Tack Corporation for the last two years have been \$100,000 per annum.

HARDWARE.

Condition of Trade.

ADVICES FROM some of the Western Hardware centers report quite a satisfactory business, but in other markets some disappointment is expressed that the volume of trade is not larger. While a steady and good business is doing, the demand has not reached the anticipated volume in view of the large crops and the confident expectation of increased activity in business circles. With the advance of the season it is, however, generally expected that there will be a marked increase in the demand, and there is little reason to doubt that the half year's volume of business will average up well, and that after a very satisfactory trade the new year will open with excellent promise. Prices remain as they have been for some time, low and irregular, without giving any general indication of increased strength. Collections are better.

Chicago.

(By Telegraph.)

Business in Shelf Hardware shows a decided improvement over last week, so that the month starts out well. The weather through the entire Northwest has been much cooler and more seasonable and the change is having an immediate effect. Merchants now look forward to a volume of business for the remainder of the year which will tax their facilities. The Heavy Hardware business is especially large. The increase last month in the trade of one house as compared with the corresponding month of last year would make a good business in itself; at the same time the prospects for the future are brighter than ever. No special changes are noted in prices. Sheet Copper is selling at as low rates as before, but not so indiscriminately, only the very best trade being able to secure extreme price. The manufacturers have not been able to come to an understanding, but it is understood that they are so well supplied with orders that the situation warrants an improvement. There is general stiffening on such goods as Carriage Bolts, Ames' Shovels, &c.

St. Louis.

(By Telegraph.)

Hardware jobbers are pushed to keep up with the strong demand made on them. Fall goods, of course, predominate, and judging by the size of the orders now being placed by the country dealers, a large fall trade is anticipated in their various localities. This is "fair" week here and the city is crowded with visitors. The various jobbing houses have called their men in off the road, so as to give the visiting customers all the possible

attention. The cold weather which set in a few days since has stimulated trade in every direction and the outlook is decidedly encouraging. Prices are well maintained and collections are improving.

Notes on Prices.

Barb Wire.—The trade have accepted the reduced prices of the Columbia Patent Company, as per announcement in our last issue, and business is moving along regularly. While the jobbers and the trade generally appreciate the advantage of having a regular price on Barb Wire, some of the jobbers are not entirely pleased with the policy of the company, which discourages the shipment of less than carload lots from factory on the jobbers' account, obliging the jobbers to carry stocks which the factories have heretofore carried for them, or else to lose the advantage of the 10 cents per 100 allowed them on carload lots.

Chicago, by Telegraph.—The jobbing trade here are not disposed to follow the schedule of prices laid down by the Columbia Patent Company, which they say does not allow them a sufficient margin. They have established a price of \$2.65 for small lots of Painted, but no price on car lots, the intention being to have but one price for any quantity.

Wire Nails.—The condition of the market remains without material change, there being a fair but not especially heavy demand, which the factories with their very large facilities, and in some instances full stocks, are able to take care of promptly. It is understood that some considerable orders have been placed, but the capacity of the mills is such that they have no difficulty in more than keeping up with the demand. The negotiations between some of the leading manufacturers, to which we referred in our last issue, are still in progress, and an effort will evidently be made to reach some understanding by which the Wire-Nail business may be put into more satisfactory shape. The problem is, however, a difficult one, and a satisfactory solution has not yet appeared. Notwithstanding that there is a fair demand there is no improvement in price and the market is, if anything, a shade weaker. Quotations are on the basis of \$1.85 @ \$1.90 at mill, the former figure being shaded in exceptional cases. Small lots from store are held at \$2.10 @ \$2.20. The low prices ruling on these goods have the effect of increasing the sales considerably and introducing the Nails in some markets which have heretofore been largely occupied by Cut Nails. This is noticeably true in the East, where the sale of Wire Nails has been smaller in proportion to Cut than in the West.

Chicago, by Telegraph.—Some manufacturers are trying to preserve a bold front and keep up prices, but others are so weak that the effort is a failure. Lower prices

have been made from factory the past week than anything previously current. Quotations of \$1.90 on such lots are no longer the inside figures. It is believed that the sales now being made will result in the retirement of some concerns from the field unless a change is speedily made. Small lots from stock sell at \$2.05 @ \$2.10.

Cut Nails.—The Cut-Nail market remains without change, the demand being fair and prices without improvement. Quotations in the East remain \$1.50 to \$1.55 for Iron and Steel Nails in carload lots, at mill, with 25-cent average. These quotations, however, are shaded on desirable orders. Quotations in the West are slightly higher, on the basis of \$1.55 to \$1.60, in carload lots, at mill, with 25-cent average.

Chicago, by Telegraph.—Cut Steel Nails are hardening a little, and better prices are being realized by some manufacturers, although others seem to find it necessary to sell at very low rates. The demand for carload lots is fair, keeping the local factories well engaged. Some sizes are quite scarce, such as heavy base sizes, but this seems to be a natural result of the present method of selling on averages above base. We continue to quote \$1.65 to \$1.70 on 25 to 30 cent average. Small lots from stock sell at \$1.75 to \$1.80.

Cordage.—The market for Cordage is firm, with a good volume of business. In view of the fact that the National Cordage Company are apparently gradually obtaining control of the market, an expectation prevails in the trade that prices may before long be higher, and the company would have no difficulty in booking orders for future delivery. They are, however, unwilling, as a rule, to take orders, except for early shipment. The manufacturers' prices for large lots, f.o.b. factory, are 8½ cents for Manila, 5½ cents for Sisal and 5 cents for New Zealand, terms 60 days, 1½ per cent. discount for cash in ten days.

Iron Rivets.—A meeting of the manufacturers of Iron Rivets was held on the 1st inst. No change was made in prices, the members apparently feeling that there was no real necessity for altering discounts, notwithstanding the irregularities which somewhat regularly prevail.

Glass.—The demand for Window Glass continues light among jobbers, with no change in prices. At a meeting of Glass manufacturers, to be held at Columbus, Ohio, October 20, the advancing of price for carload lots to 80 and 10 per cent. discount will be considered. It is stated that this advance being made will depend largely upon the advantage taken of the recent decline by jobbers and large buyers to place heavy orders for this and next month's shipment. It is not plain why 80, 10 and 5 per cent. discount should be considered an inducement for the placing of large orders by jobbers and large buyers.

The price made at the Columbus meeting, which was held the last of September, was 80, 10 and 5 per cent. discount for car lots at factory. The same price is quoted by New York jobbing houses. Hence the jobber must have contracts placed for Glass or be able to place contracts with manufacturers at a price which will allow them to sell at factory prices with a profit to themselves. The price of 75 and 10 per cent. discount for imported Glass, ruling for the month of October, is being maintained. Printed quotations are as follows: American Window Glass, in carloads, 80 and 10 and 5 per cent. discount; less than car lots, 80 and 5 per cent. discount; French Window Glass, 75 and 10 per cent. discount; American Plate is held at a discount of 50, 10 and 5 per cent., and Imported Plate at a discount of 60 per cent.

Farm Boilers, &c.—In connection with their Twenty-third annual price-list, D. R. Sperry & Co., Batavia, Ill., issue the following discount sheet, terms 90 days, 3 per cent. discount for cash in 10 days:

	Per cent.
Farm Boilers.....	40
The Dairy Maid.....	35
Laundry Stoves.....	40
Caldrons.....	45
Soap Boilers' Kettles.....	40&5
Hog Scalders.....	40&5
Doors and Frames.....	50
Grates and Rests.....	50
Bakers' Oven Castings.....	45
Sugar Kettles.....	55
Sugar Kettles, in lots of eight or more, shipped direct from factory.....	55&5
Steam-Jacket Kettles.....	25
Water-Jacket Kettles.....	25
Sperry's Mauls.....	60&5
Wood-Face Mauls.....	35
Extra Finished Hollow Ware.....	50
Plain Hollow Ware—Tea Kettles, Ham Boilers, Long Pans, Waffle Irons and all Stove Ware Unground.....	55
Foundation Gratings.....	45
Coffee Roaster.....	40
Felloe Oilers.....	50
Bake Ovens.....	50&5
Drug Mortar.....	40
Cork Press.....	30
Retorts.....	40
Retort Stands.....	30
Hitching Posts.....	35
Step Blocks.....	35
Mennonite Cooking Utensils.....	50

Steel Door Mat.—The Wire Goods Company, Worcester, Mass., are selling their Elastic Steel Door Mat, which is made from flat strips of tempered steel, at the following reduced price-list, which is subject to a discount of 10 per cent:

No.	Each.
No. 2, 16 x 24.....	\$1.00
No. 3, 18 x 30.....	1.50
No. 4, 22 x 36.....	2.00
No. 5, 26 x 48.....	3.00
No. 6, 30 x 48.....	4.00
No. 7, 36 x 48.....	4.50

Trade Items.

PRENTISS VISE CO., 44 Barclay street, New York, call the attention of the trade to some interesting additions to their line of Vises, as shown in their catalogue of recent issue. In Iron Workers' Vises Nos. 2½ and 19½ are new sizes, with 4-inch self adjusting jaw. The entire line of patterns for their Filers' Vises have been remodeled, making them very heavy and strong. Three new sizes, Nos. 51, 53 and 56 have been added to the line of Bull Dog Vises; the number 56 being referred to as a 6-inch Vise in which the weight and strength are prominent features.

AN ARTISTIC PAMPHLET has been issued with illustrations of Rhode Island indus-

tries, together with views at Narragansett Park, Providence, R. I. Among the pictures given of manufactories is that of the Rhode Island Horse Shoe Company, at Valley Falls, R. I., showing a bird's eye view of their large and extensive buildings.

STRANSKY & Co., 265 and 267 Canal street, New York, importers of blue and white Stransky-Steel ware, began importing this enameled ware about ten years ago, and are referred to as pioneers in the line. For the past two years they report an enlarged demand for these goods, as they are now furnishing all the American shapes. This imported ware is blue on the outside and white inside, the white interior adding to their popularity for culinary purposes. The ware is referred to as extremely durable, absolutely pure, quick cooking and easily cleaned. A diploma of honor of the first class has recently been awarded to Stransky & Co., for enamel kitchen utensils, at the Exhibition of Industrial Productions held at London, England.

O. LINDEMANN & Co., 81 Beekman street, New York, manufacturers of Bird Cages, have just gotten out a show sign of the Lindemann Solid Brass Cage. The show card is of heavy cardboard, nearly 11 x 15 inches, with beveled edges. The Cage shown is full size, of handsome design, printed to represent brass. Underneath the cage are the words, "Strongest, Neatest, Best, For Sale Here." Across the Cage, in red letters, is printed, "The Lindemann Solid Brass Cage." The other lettering and the edges of the card are in gold, making a neat and effective sign.

BURKE MFG. COMPANY, Pittsburgh, Pa., call attention to their Acme Stove Pipe, which is nested in crates of 25 joints, each requiring but little more room than a single joint. The pipe is made from No. 27 smooth cold rolled refined iron, and requires no tools or rivets in putting the pipe together. It is held together by locked seams and overlap joints at the crimped ends.

AT THE PORTLAND INDUSTRIAL EXPOSITION, recently held at Portland, Ore., the display of Staver & Walker is spoken of as one of the most attractive. In addition to their elaborate display of vehicles they also had a very large and interesting display of machinery. Their exhibit in this department occupied the entire northeast quarter of Machinery Hall and contained new and interesting features, indicative of the increase and growth of their business. As the space allotted them by the exposition was insufficient for the needs of their many and varied departments, they prepared in their warehouses, at the New Market Block in Portland, an interesting exhibit of the various lines of goods for which they did not have space at the exhibition. The above firm have their headquarters at Portland, with branch houses situated at such points as are best fitted for supplying the demands of their large business throughout the Northwest.

THE IDEAL MFG. COMPANY, New Haven, Conn., are about issuing a second edition of 10,000 of their Ideal Hand Book of Useful Information for Shooters. The book contains valuable suggestions to lovers of the gun, and especially to riflemen. It gives tabulated information valuable to all, and directions regarding reloading tools and the system to be followed in using the same. It also describes the manner in which the shooter should prepare his ammunition for Rifles, Pistols and Shot Guns. The book is well worth sending stamp for.

ADAMS & WESTLAKE COMPANY, Chicago, announce that they have purchased from the Henry C. Hart Mfg Company, Detroit, Mich., all the tools, machinery, pat-

terns and patents used in making their well known Matchless and Champion Air Guns, also all stock and material and the good will of the business. All unfilled orders have been assumed by the former company and all correspondence in regard to same as well as all new orders should be addressed to them. They state that the high grade of workmanship which has heretofore been a feature of these Guns will be maintained, and that as soon as their machinery is in running order, which will be inside of 30 days, they will be able to fill all orders promptly. The Henry C. Hart Mfg Company also make an announcement in regard to the matter, confirming the above.

IN THEIR ADVERTISEMENT in this issue, John H. Graham & Co., 113 Chambers street, New York, illustrate the Universal Corn Husker, for the sale of which they are sole agents, and enumerate some of the advantages possessed by it.

THE FIRM OF B. F. CRAIN & SON, Utica, Pa., has been dissolved by mutual consent, T. S. Crain having retired from the firm. Mr. Crain has accepted a position elsewhere. The business will be continued by B. F. Crain, who assumes all the liabilities of the old firm.

THE TRADE WILL OBSERVE the page advertisement of Nelson B. Williams, 232 and 242 Newberry avenue, Chicago, Ill., in which, in connection with the Iron and Steel products which he is marketing, he calls attention to Barb Wire, Wire Nails and Cut Nails, which can be shipped immediately in mixed or straight carloads from a fully assorted stock carried in Chicago warehouses.

AN OBSERVANT HARDWAREMAN in Minnesota, after mentioning the excellent crops in that section, refers as follows to the condition of trade:

Immediate trade and collections are slow. Money is tight, but we have every apparent reason to anticipate a lively trade in the near future. Stocks of merchandise are light, the conservative policy of confining purchases to actual needs still obtaining despite acknowledged low prices. Farming lands are steadily enhancing in value, though considerable of the best are yet to be had at reasonable prices.

B. D. HUBERS, Summerville, Ore., advises us that the paragraph in a recent issue in which it was reported that he had sold a half interest in his business is without foundation, the entire business being controlled by him as heretofore.

SAMUEL MCKNIGHT of Allegheny, Pa., whose store was totally destroyed by fire some time ago, has completed a very fine double four-story stone-front building, and expects to occupy same in about three weeks. His new rooms are described as being among the finest in Western Pennsylvania, and he will add several lines to his already large and varied stock.

THE WELL-KNOWN LINE of Champion Lumbering Tools, manufactured by Champion Tool and Handle Works, Evart, Mich., are the subject of the company's advertisement in another part of this issue. Several illustrations are given and attention called to the fact that the company manufacture a complete line of standard and special size Tools adapted for use in all sections.

Price-Lists, Circulars, &c.

SICKELS, SWEET & LYON, 35 Barclay street and 40 Park place, New York: Hardware, Cutlery and Guns. Their catalogue for the fall of 1891 represents very satisfactorily, with illustrations and price-lists, the goods made especially for them and those for which they are New York agents, suitable for the fall and winter trade. They sell under their own brand True Blue and Silver Crescent Axes, Robert Sickel's Hatchets and Edge Tools, Hand Saws, Pocket Knives and

Razors, Sickle's, Hamilton's, Eldridge & Loder's Shovels and Spades, Sickle's, Sweet's and Taylor's Scoops, &c. They are also New York agents for American Shear Company's Pocket Knives; Adjustable Bolt Shears and Scissors, Eagle File Company's Files and Horse Rasps, Hathaway Fence Wire, Simonds' Crescent Ground Cross-Cut Saws and Atkins' Saw Tools. The above address is also the New York office of Sickle's, Preston & Nutting Company, Davenport, Iowa.

E. T. BARNUM, Detroit, Mich.: Art Wire and Iron Work. A recent catalogue shows new and popular designs of Builders' and Art Wire and Iron Work; including Antique Brass Bank and Office Railing, Lawn Settees and Chairs, Stable Furniture, Jail Cells, Wire Signs, Cresting and Tower Ornaments, Wire and Iron Fences for residences parks and public grounds, Balcony Railing, Fire Escapes &c. Mr. Barnum does a large business by mail and his catalogues are admirably arranged to give the purchaser an idea as to choosing a design and the cost of the work. He makes a specialty of ornamental Wire Work in the way of Fire Place and Radiator Guards, and offers a large number of artistic designs to select from.

E. C. MEACHAM ARMS COMPANY, St. Louis, Mo.: Wholesale Bicycle catalogue for dealers only. A large line of these goods are shown, upon which prices have been revised to stimulate sales. The catalogue also includes Bicycle Sundries, Lawn Tennis, Tricycles, Velocipedes and Guns.

MEADVILLE VISE COMPANY, Meadville, Pa.: Machinists' Solid Jaw Parallel Vise, Steel Bar Combination Pipe Vise, Flexible Gas Brackets, Cheese Cutters, Barrett Improved Boring Machine, Window Glass Works Machinery, Houze's Leers, Flattening Forks, Barrett Machine Cork Puller, Pot Set Trucks, &c.

THE CHIEFTAIN COMPANY, Canton, Ohio: Hardware Specialties, Cyclone and Lightning Can Openers; Gem Vegetable Mashers; Royal and Superior Saw Sets; Little Giant, Hercules, New Champion and Scheidler Post-Hole Diggers, &c.

THE UNITED STATES WIRE MAT COMPANY, Decatur, Ill., Harmon & Dixon, 118 Chambers street, New York, agents: Wire Mats and Matting for dwellings, stores, public buildings, business offices, street cars, &c. These are made in both Galvanized Steel and Brass Wire, in Mats; also in 50 and 100 foot rolls. The roll Matting is made from 16 to 48 inches wide, and can be divided into desired lengths by cutting one Wire in two places.

BROWN & SHARPE MFG. CO., Providence, R. I.: Machinery, Tools and Castings; also Darling, Brown & Sharpe, U. S. Standard Rules, Cast-Steel Try Squares, Standard Wire Gauges and Tools for Accurate Measurements, Providence, R. I. These two lines of goods are embraced in one catalogue, with illustrations, price-lists, &c. It is stated that the machines and tools described in this catalogue are made with the intention that they shall be the best of their respective classes; also that cylindrical bearings are accurately ground, plain bearings are scraped to surface plates and that alignments are correct.

HOLMES & EDWARDS SILVER COMPANY, Bridgeport, Conn., New York, Chicago, St. Louis and Philadelphia: Electro Silver-Plated Spoons, Forks, Knives, Ladles, &c. In presenting this catalogue the manufacturers announce that their success in the last few years has been extremely gratifying, and as their facilities for production enlarge they find themselves better able to supply the demands of all Silver-Plated Flat Ware trade. The book contains nearly 100 pages, which are fully illustrated, showing unique and pleasing designs. Pages devoted to price-lists of the various patterns immediately follow the pages on which any particular line is illustrated. From a typographic

standpoint the work is also satisfactory, and it will doubtless be appreciated by the trade. In the front of the catalogue a reproduction of the certificate of honor is given, as awarded this firm at the International Exhibition at Jamaica, West Indies, June, 1891, together with that of the gold medal received at the same time and place.

THE HESS SPRING COMPANY, Cincinnati, Ohio: Carriages, Wagon and Truck Springs and specialties in patent Springs, &c. Illustrations are given of the Improved Depee Coil Spring, Duplex Torsion, Jenny Lind, Queen, Smith's Spiral and Superior Coil. Patterns not covered by illustrations are the Elliptic, Concord Side, Platform, Coach Platform, Truck, Cab, Sulky, Brewster, Timken, &c. They state that the demands of the trade in general have induced them to add a department devoted exclusively to the manufacture of Coil and Torsion Springs.

NOERA MFG. COMPANY, Boston, Mass.: Noera and Draper Oilers and Lamps, in brass and steel. These goods are made in a variety of sizes and styles, including Oilers for the use of mechanics and railroad engineers, Mill Oilers, Steamboat Sets, Steel Tallow Pots; also Steel Jacket and Brass Alcohol Lamps. The Noera Oiler is arranged with an air vent tube, which takes the place of the spring or flexible bottom to the can.

Southern Hardware Jobbers' Association.

A MEETING of the Hardware jobbers of Tennessee was held at the Commercial Club Rooms in Nashville, Tenn., on October 30, at which the following firms were represented:

NASHVILLE.

Gray, Fall & Co., by A. H. Fall.
Dudley Bros., by Major R. H. Dudley.
Buford Bros., by Edward Buford.
Pollard, Black & Co., by W. M. Pollard.
Bransford Hardware Co., by W. S. Bransford.

MEMPHIS.

Cousens, Matthews & Ramsey, by P. R. Cousens.
Langstaff Hardware Co., by A. D. Langstaff.
Orgill Bros. & Co., by A. D. Langstaff, proxy.

CHATTANOOGA.

Vance & Kirby, by J. C. Vance.
Carter-Magill Hardware Co., by J. C. Vance, proxy.

KNOXVILLE.

W. W. Woodruff & Co., by W. E. Gibbens.
George Brown, by J. S. Brown.
C. M. McClung & Co., by W. P. Smith.
S. B. Luttrell & Co., by J. S. Brown, proxy.

The meeting was called to order by Major R. H. Dudley, who called W. E. Gibbens temporarily to the chair, and W. P. Smith was designated as temporary secretary.

The objects of the meeting were then explained to be:

1. A permanent organization of the Hardware jobbers of the State for the purpose of promoting more intimate social relations among them, and consequently a more friendly feeling.

2. To promote the commercial interests of the Hardware jobbers of the State in every way possible.

3. To foster and encourage through social intercourse that which will inure to our mutual benefit.

After which Messrs. J. C. Vance of Chattanooga, R. H. Dudley of Nashville, A. D. Langstaff of Memphis and J. S. Brown of Knoxville were appointed a committee to draft suitable by-laws for the government of the association, and a recess was then taken until 3 p.m. of the same day.

Upon reassembling, it was unanimously agreed that, instead of forming a State association, it should be styled the "Southern Hardware Jobbers' Association," and that the jobbers of other Southern cities should be asked to become members of and co-operate with the association. The by-laws were then read and adopted, and the following permanent officers were elected to serve until the next annual meeting, which will be held in Memphis, Tenn., on the second Monday in May, 1892.

W. E. Gibbens, Knoxville, president.
A. D. Langstaff, Memphis, first vice-president.
R. H. Dudley, Nashville, second vice-president.
W. P. Smith, Knoxville, secretary.
J. C. Vance, Chattanooga, treasurer.

Many matters of interest pertaining to the Wholesale Hardware business were discussed, among which were the subjects of box and drayage, the best means of employing and governing traveling salesmen, and the excessive rate or classification of Hardware by the Southern Railway and Steamship Association.

It was unanimously agreed that Hardware was classed, as a rule, much higher in proportion than any other branch of merchandise, and a committee composed of W. P. Smith, Edward Buford and P. R. Cousens was appointed to go before the Rate Committee of said association at its next meeting, and see if something could not be done to correct the existing evils in freight classification.

Another matter discussed at length was the practice of a large number of manufacturers and their agents, in visiting the small towns and selling the retail trade after having sold the jobbers, and in many instances selling them at a price so near the price charged the jobber as to leave the jobber comparatively no profit, were he forced to meet the price.

This practice, it was conceded, is becoming more general every year, and it was unanimously agreed by all present that it was doing the jobber great injustice, particularly so in the case of the manufacturer who sells both the jobber and the retailer, and while the feeling was adverse to anything which would be construed as dictating to the manufacturer that he should sell the jobber exclusively, yet it was the general feeling of every one present that it was to the interest of the jobber to patronize (all things being equal) the manufacturer who showed a willingness to protect him and his interests.

GOOD BUYING.*

BY FRED. MACEY, GRAND RAPIDS, MICH.

GOOD BUYING makes easy sales, and a buyer who can purchase the most goods of a specified quality for the least money is one of the most important factors necessary to the success of any business. By his efforts he puts his house in a position to successfully compete for trade—at least, so far as prices are concerned.

To simply place an order is an easy matter—any person can do it, but to know just what, when, where, at what price and terms and how much to order to best advantage, requires experience. A good buyer must not only possess a perfect knowledge of the demands of his own business, he must also keep pace with the industries tributary to it.

The difference in location, size and class of a business has so much to do in guiding a buyer in his purchases, that it is impossible to formulate a code of rules that will not have to be modified, more or less, in their details, to be adaptable to any particular business. It will, therefore, be the object of this article not to prescribe rules useful in any particular business, but rather to suggest principles and trust to the reader's intelligence to modify them to best suit his requirements.

For the sake of clearness, we will consider the different steps necessary to every purchase, in their usual order, commencing at the creation of the want to the final payment of the bill. The first step to decide in any purchase is:

What to Buy.

STAPLE GOODS.—Keep as perfect stock as possible of the staples the trade demands. What this demand is, each buyer must decide by observation and experience. For instance, where a complete stock of sandpaper is a necessity to the buyer in a manufacturing center, it would be "dead stock" to a country dealer. A buyer must adapt his purchases to the size, location and class of his business.

NEW GOODS.—Do not buy every new fangled article that is placed on the market. Make it a point, however, to secure and keep for easy reference any catalogue, circular or quotation relative to it, so that in case a customer asks for it, his wants can receive proper attention.

Before ordering a new article, careful consideration should be given to the class of the buyer's trade, the character of the house selling it, and the recommendations showing forth its merits. A new article, well recommended by its users, sold by a reputable house, and, in the judgment of the buyer, suitable to his trade, will generally prove good stock.

WANT CARDS.—When any department is in need of any particular article, the use of a card similar to that illustrated in Fig. 1 will prove valuable. These cards are preferable to a book for three reasons:

1. The salesman can carry them in his pocket, and can fill them out wherever he happens to be.

* Copyrighted, 1891, by David Williams.

2. Being on a separate card, the order receives better attention than if entered in a book. A card can be sent to the buyer at once. A book at stated times, or the buyer must take time and copy from it.

3. By the use of a pigeon hole within easy reach all unfilled orders can be kept in compact form. As soon as an order is filled the card is filed for future reference.

How Much to Buy

Is a question that at times requires careful consideration. It may, however, be treated under three heads, as follows:

GOODS THAT ARE REGULAR STOCK.—In case of regular stock it is a good rule to keep enough stock on hand to last at least three times the length of time generally necessary to get the goods after the order is placed. By following this rule the buyer gives himself ample time to solicit prices and avoids unnecessary expense and trouble incurred by telegraphing and unusual delays in fill-

tracts," further reference to it here is unnecessary.

The tact, experience, knowledge, ingenuity, system and judgment of the buyer is in no place of greater value than when exercised in.

Securing Good Prices.

Of the many plans for obtaining favorable quotations, the following may be considered of greatest value:

SOLICIT PRICES BY LETTER.—Letters give the buyer command of a large field at little expense, and have not the appearance of a mere canvass for prices that a postal card indicates. A letter is less liable to be overlooked than a card, and certainly has more the appearance of business.

State the wants in language both clear and concise; time and trouble in writing a second letter, to explain the first, will then be avoided. Write a half-dozen letters, to as many first-class firms. Several

BISSELL CARPET SWEEPER CO.
Department Order.

Grand Rapids, Mich. July 10th 1890.

To STOCK CLERK:

My Department is in need of one (1)

iron elevator cable - 120 ft. 5/8" x 19

at once

Your prompt attention is desired.

Foreman.

Date filled 7-15-1890 by _____

Fig. 1.—Want Card.

ing the order. In addition to this, the stock is always bright and new.

NEW GOODS AND SPECIAL WANTS.—In ordering new goods with a view to making them regular stock, it is a safe plan to order sparingly at first. If they prove poor sellers, then the loss is not great. A still better plan is to order the first lot on trial. If they are a success, order again; if not, return the goods to the seller.

When a customer desires an article not in regular demand, take his order and buy just what it calls for and nothing more. Be careful, however, to keep a perfect record of the purchase, so that in case it is called for a second time it can be referred to promptly. By following this plan, dead stock is avoided and the customer's trade retained.

ORDERING AHEAD OF IMMEDIATE WANTS.—When the price of certain staples has reached an extremely low figure, or when purchasing goods subject to quantity discounts, it is often advisable, in order to get the benefit of the best prices, to order ahead of immediate wants; but as this matter is fully discussed under "Con-

quotations will be the result. If the purchase is to be large, select the most favorable quotation, lay it aside, and reply to the balance about as follows:

GENTLEMEN.—We are in receipt of your quotation of recent date, and in reply desire to say that we have received more favorable prices from other parties. If you are inclined to make any concession from your price, we shall be pleased to consider it before placing the order. Awaiting your reply, we are,

Yours respectfully.

Invariably concessions are the result. If they are more favorable than the quotation first selected, this party, also, should be approached in like manner to the first five. A reply to the last makes it an easy matter to decide where lowest prices can be obtained. Do not be afraid of a few postage stamps—they always pay for themselves many times over.

USE NEAT STATIONERY.—Poor stationery is false economy. In this age of cheap paper and printing it cannot be and is not excused. A buyer cannot afford to use it. The stationery of a business house to-day is an index to the character of the user, almost as reliable as the commercial re-

ports are to his financial standing. Other things being equal, who will receive the better credit, the buyer who uses a letter head neatly printed, or the one who scrawls his wants on a leaf torn from some old blank book? Need we answer?

READ ADVERTISEMENTS.—From the advertisements in *The Iron Age* and other trade papers, in trade directories, on letter heads, salesman's cards, catalogues, circulars, &c., the buyer obtains the addresses

prices it is possible to buy is too valuable to be neglected. By some such system the buyer can many times place an order at once, avoiding both expense and delay in first soliciting prices. More than this, it can be used as one of the buyer's most powerful levers in obtaining good prices from traveling salesmen. When a buyer is considering the quotation of a salesman with a view to placing an order, what greater guide can he have than a complete record of quotations made by other par-

is its agent, and it is guided by his actions.

Both courtesy and business policy demand their treatment as gentlemen, for such they are. Reciprocate their bright "good morning" and extended hand. Be friendly, but do not let it interfere with business. Converse freely with these periodic visitors. They have seen much and in their line can tell much that will prove both interesting and valuable to the buyer.

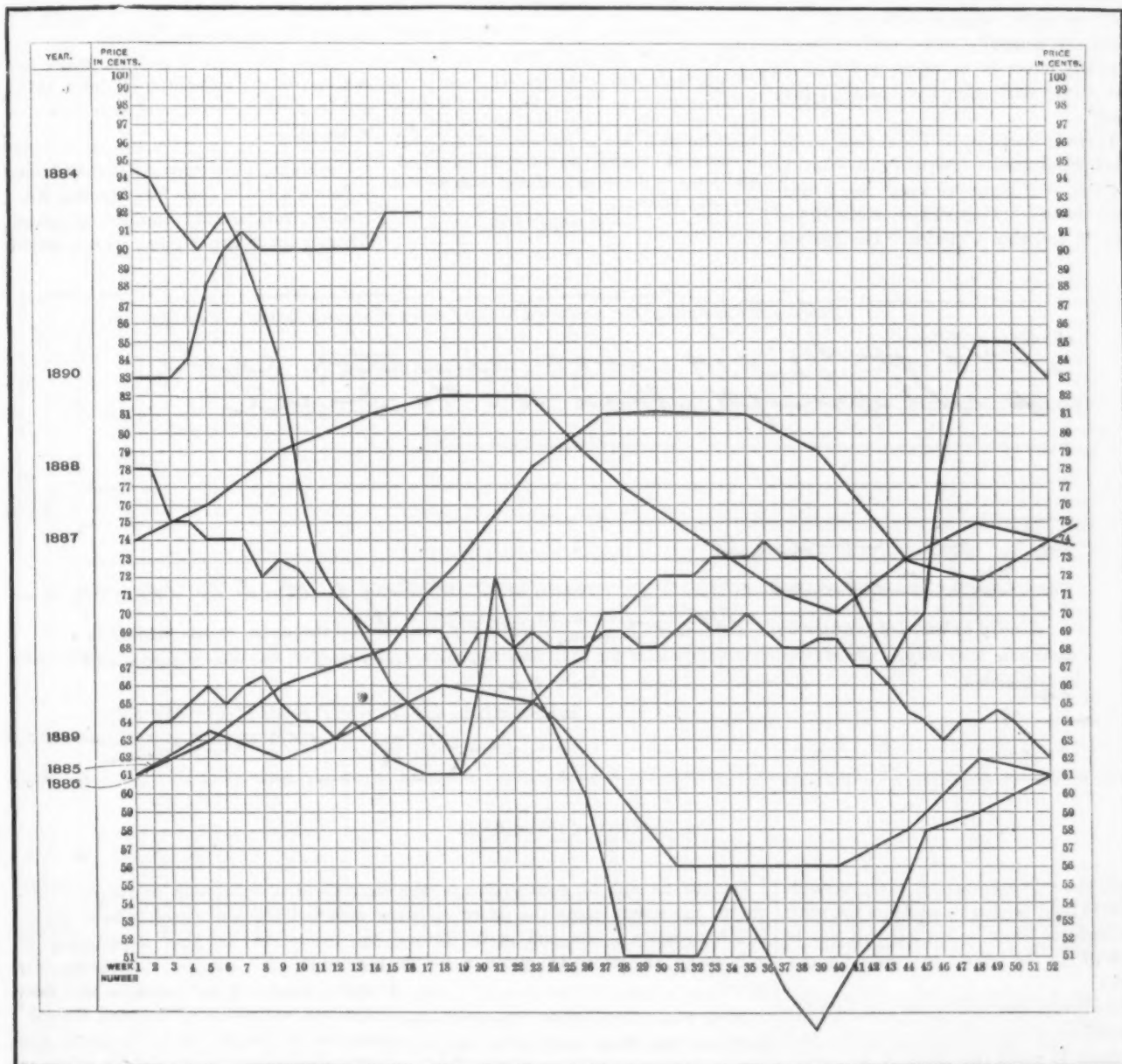


Fig. 2.—Method of Recording Fluctuations in the Market, Illustrated by Price of Rubber 1884-1890.—(Reduced.)

of those firms who can meet his wants. Read them carefully; to them the buyer must look for changes in price-lists and markets, for improved methods of manufacture, and the establishment of new firms. Index and file them for future reference. Keep a classified list of the goods liable to be ordered, and under each article record the names of all the firms in a position to supply it. When in need, it becomes an easy matter to address letters of inquiry for prices.

KEEP A RECORD OF QUOTATIONS.—The quotations received are too numerous to trust to memory, and the value of knowing at all times just where and at what

ties? The buyer then knows exactly what he can do elsewhere, and unless the salesman can quote a better price there is no inducement to place an order.

TRAVELING SALESMEN.—As a rule drummers work either on a commission or on a salary, the size of which is regulated by the amount of their sales and the hold they have on the trade they visit. When a salesman calls he comes as the representative of his house. To him has been given authority to quote the lowest prices and terms necessary to secure trade. Through him his house becomes acquainted with the size, character and apparent prosperity of the business houses he visits. He

Owing to the proverbial veracity of the craft, it is well at times to take their statements with more or less salt. But treat them well; show an interest in their welfare, and they will see that yours does not suffer.

When a salesman quotes a price, refer to and see how it compares with previous quotations. If favorable, solicit further concessions, if not in price, then in discounts, length of time, freights, &c. When price is satisfactory, tell him so and thank him for it, and, if possible, place an order and ask him to call again. Keep his address, and when in position to order, direct the letter to him in preference to the

house. The salesman appreciates it. He gets credit for the sale, and also of having a hold on his trade, and the buyer gets better prices.

If a salesman's price is too high, tell him so. If there is any such thing possible, he will either meet the better price or lower it. His pride in his house and success as a salesman demand it. If he cannot meet the price, the prestige of his house is at stake; if he betters it he gains a point, and generally an order, with prospects of future trade.

Salesmen seldom name their best price first, so never appear anxious to buy. They are generally more anxious to sell than the buyer is to order, and will not lose a sale until they have reached their limit.

There is, perhaps, no better time to get good prices from a salesman than when he has left one house to work for a rival. Here the trite "Competition is the life of trade" becomes a fiction. On the one

his quotation, and that there is no time for dallying, so rather than risk the loss of a good sale, and possibly a good customer, he quotes his very best price at once.

TAKE TIME.—Always take ample time to solicit prices before placing an order. Ordering at poor prices, expensive telegrams and annoying delays will then be avoided.

CORRESPONDENCE.—Correspondence of all kinds should be answered both courteously and promptly as possible. Courtesy to the seller and business policy to the buyer demand it. If prices are satisfactory, place an order at once; if not, then simply reply about as follows:

GENTLEMEN.—Your letter of the 24th inst. carefully noted, but prices are too high for us to use at present. We desire, however, to thank you for your quotation, and hope to do some business with you in the near future.

Yours respectfully.

count. All jobbers will not do this, but there are those who will. Find them.

COMBINATIONS AND SYNDICATES.—A union of manufacturers for the purpose of holding prices to a given figure seldom lasts long. The firm that produces the finest goods, puts them up in the neatest form and has the pleasantest manner in reaching the trade, soon begins to secure the best orders. Confederates see their trade losing ground, become dissatisfied, and cut prices to get it back. Result, combination breaks. This furnishes one of the best fields for a buyer to exercise his ingenuity in securing good prices.

If your purchases are large, make the fact known. Competition for your trade will be all the sharper and will result in better prices.

FREIGHTS, DISCOUNTS, PACKAGES, &C.—This is a fertile field for obtaining concessions from already established prices. Where a cut in the original figures would

Please enter our order for, and send to our factory at Grand Rapids, Michigan, merchandise as follows:

170 ft 5/8" x 19 iron elevator cable
@ 14¢ per ft less 40% discount

Date, at once

Via U.S. Express Terms, 60 days at 2% - 10 days

Kindly acknowledge order by Wire, stating if you can fill the same or not, and if so, date you will ship. Send invoice, accompanied by Bill Lading, with class, weight, the No. of pieces and rate inserted.

Yours truly,
BISSELL CARPET SWEEPER CO.
Per Macey

Fig. 3.—Form of Order Blank.

hand, the salesman makes every possible effort to hold his trade, while on the other the business house he has left will not be outdone in its efforts to retain its customer.

The reader can readily see how by a few repetitions of this rule—i. e., require each salesman to notch the price of his predecessor just a little, the bottom price must soon be reached.

PERSONAL VISITS.—Personal visits to the business houses of the manufacturers and jobbers are often helpful to the buyer. By a knowledge of the manufacturing methods and extent of the business of those with whom he deals, a buyer is in a position to both solicit prices and order goods to better advantage than if unacquainted with the manufacturing cost of the articles he buys, and the system of the firms from whom he orders.

TELEGRAPHING FOR PRICES.—When done with discretion, telegraphing for prices often proves effective in securing good figures. The receiver understands that a purchase is pending the arrival of

On the receipt of such a letter as the above, the seller learns the cause of his failure to make a sale, and in the future will make an effort to quote a better price.

NEW FIRMS.—In their efforts to gain business new firms will, as a rule, cut prices as an inducement for the buyer to deal with them. Before patronizing a new house it is always policy to look well into its character. If satisfied that it will furnish satisfactory goods and "stand by" you when collections are slow and trade dull, give the old house a chance to meet prices. If it cannot do it it is then time to try the new field.

QUANTITY DISCOUNTS.—Where goods are protected by patents or the prices are fixed by a combination of manufacturers, and concessions in price are regulated entirely by the quantity purchased, if the buyer's purchases do not entitle him to the best possible discount, it is generally the best plan to find a jobber whose purchases are large, and who, in order to secure an order, is willing to divide his dis-

be refused, a concession in freights, discounts and packages can often be obtained. By discretion in this department of his work in gaining allowances for freight, discounts for packages and cash payments, extensions of time and the substitution of larger cash discounts, the buyer can reduce the cost of his goods to a minimum.

One cent is a small sum, yet 1 per cent. discount on \$100,000 business amounts to \$1000.

PRICES GUARANTEED.—There are many houses who will accept orders and guarantee prices—i. e., they agree to meet any quotation that may be made before the order is filled, quality, of course, considered. When contemplating placing an order, this is an important clause for consideration.

CONTRACTS.—So far the suggestions made have been confined mostly to securing good prices for immediate wants. The successful buyer, however, must go still further. He must know when the manufacturer is in position to quote low

Article	Kind	No	Date Ordered	Ordered From	How Del'd	Quantity	Price	Term	Ask'd	Term	Every	Date Invoice	Received From	Quantity	Price	Time	Trans.	Vin.	Pr. Date	Pr. Paid	Shipped	Received	Date Paid
Elevator Cable	Iron	1	July 12, 90	R. Moore & Co.	120 ft. 1/2" 120 ft. 1/2" 120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"	120 ft. 1/2"

Fig. 4.—Order Record.—About Two-Thirds Size.

prices. He must be able to decide when to contract and when not, when to purchase heavily and also sparingly. In other words, he must know the basis of cost to the manufacturer. In most staples this will be found to be the cost of the raw material entering largely into their manufacture. The price of raw material, in its turn, is governed by the law of supply and demand, and therefore fluctuates from day to day. When prices of raw material have reached an extremely low point, then is the time to buy ahead, either by contract or direct order. If prices are high, it is well to go slow and hold back for better prices. The main question to decide before making a contract is, is the price of raw material high or low? This question can only be answered by the comparison of the prices quoted at stated times in the past. The longer the time covered, the safer will be the comparison. It is evi-

passing through them, showing the rise and fall in price during the year. The value of these charts to large buyers will be readily seen.

It will not do, however, to trust to the price of raw material alone in making contracts. Improved methods of manufacture, expiration and issuance of patents, changes in tariff, stocks on hand, supply and demand, must all be considered. Nor is this all; the buyer must be able to forecast the market, or, in other words, from present data infer the future, and in this reference make no mistake. Too great care cannot be given to this department of a buyer's work.

How, When and From Whom to Buy.

USE AN ORDER FORM.—A printed order form, similar to Fig. 3, has many points of merit. Embrace in the printing all the points desirable in regular orders. An-

PRESSING WANTS		
DATE	GOODS ORDERED	FROM
7-1-90	1 bag #12 1/2" 1/2" 1/2"	J. R. M. Co.
7-3-90	1 Coil #12 1/2" 1/2" 1/2"	J. R. M. Co.
7-5-90	1 Coil #12 1/2" 1/2" 1/2"	J. R. M. Co.
7-7-90	1 Coil #12 1/2" 1/2" 1/2"	J. R. M. Co.
7-9-90	1 Coil #12 1/2" 1/2" 1/2"	J. R. M. Co.
7-10-90	1 Elevator Cable	J. R. M. Co.

Fig. 5.—Card for Noting Pressing Wants.—Size, 4 1/4 x 12 inches.

dent that the best market quotations can be had from the reports contained in some reliable trade paper, but how to record them for easy comparison requires a special form. Experience has shown that a card ruled similar to Fig. 2 serves this purpose to best advantage. To illustrate, let us consider the price of rubber goods, the price of which is generally governed by the price of fine Para. A buyer wants to make a contract for his yearly supply, but before doing so he looks up the price of the raw material to see if the price is such that the manufacturer can make him low figures. Suppose the price is 45 cents. All that is necessary to decide whether the contract is a safe move or not is to glance at Fig. 2. He will see that 45 cents is the lowest point reached in the seven years recorded and that it is a good time to contract. If the price is 94 cents it is just as easy to see that better prices are probable by waiting.

To record a quotation requires but a minute, as all that is necessary is to make a check mark where the date and price lines intersect and once a year draw a line

noyances from omissions will then be avoided, such as having goods shipped by freight when they should come by express, and vice versa.

Be accurate, concise and plain in the statement of goods wanted. If the order is lengthy, classify as much as possible. By so doing the order can be filled promptly and correctly. Keep a correct copy of each order. In case of error it is then an easy matter to locate the blame.

FAVORING FRIENDS.—The buyer's aim is to get the most goods at the least cost, quality always considered. The seller who can meet this requirement is entitled to the order and justice awards it. If he happens to be a friend, so much the pleasanter.

PATRONIZING HOME INDUSTRIES.—All other conditions equal, it is a buyer's duty to patronize firms located in the territory from which he derives his trade. By so doing he contributes to the prosperity of his own business.

SALESMAN vs. THE HOUSE.—A buyer will generally find it to his advantage to place an order with a salesman in prefer-

ence to the house. As already stated, his salary depends on the amount of his sales and the hold he has on his trade, and rather than lose the credit of the order he will generally make his best possible price.

ORDERING BY TELEGRAPH.—When goods are wanted at the very earliest possible moment, the best results can be had by telegrams. Any letter, however worded, does not seem to produce the immediate results that accompany the telegram. When it is necessary to telegraph to any extent, a telegraph code should be adopted.

SAME AS LAST.—This little phrase, when properly used, saves much time for the buyer. When goods are wanted promptly, it is safer to refer to the exact date and

is placed, what they actually cost, &c. For this purpose, a book ruled similar to Fig. 4 is an excellent system. The book is furnished with an index, so that reference to any article is an easy matter. The figure explains itself to the reader, so that further comment is unnecessary, unless it is to say that by use of the vertical rulings any desired information about any particular order can be had promptly.

PRESSING WANTS.—Urgent orders demand the buyer's constant attention. He must make every effort to get his goods at the earliest date possible. For keeping such orders constantly under notice, no better plan can be used than to keep a card similar to that illustrated in Fig. 5. This card is fastened on the top of the

quantity and quality tally correctly with the report of goods actually received, that the proper list prices are used, that the calculations are correct, that the time discounts, rebates, allowances for freights, packages and cash payments, and other terms of settlement, are as agreed. If there is an error, report it at once. It is much easier to adjust these differences at once than to wait 60 or 90 days.

After a bill is "O. K'd," see that it is paid the exact date it is due, not a day earlier or later. A seller will quote better prices and offer better terms to hold the trade of a buyer who attends well to this matter. His trade is more desirable than that of the one who is careless in his settlements. If the bill is subject to a cash discount, do not wait several days over time before taking advantage of it. If collections are slow, and it is impossible to pay a bill when it is due, do not neglect to write to the seller and get an extension of time. He will then know just what to expect and make calculations accordingly. Paying "on account" is a bad practice, and should be avoided as much as possible. Aim as far as possible to make payments that will balance the account to some specified date. Making and checking statements will then be an easy matter.

In conclusion, perhaps nothing better can be said than to say that the suggestions in this article are not mere theories, but have by practical application proved themselves valuable aids in the purchase of goods at favorable prices.

It is Reported—

That burglars entered the Hardware store of D. I. Newberry, Chehalis, Wash., on September 22, and stole about \$200 worth of Revolvers, Knives, Razors, &c.

That Ewing & Emrich's Hardware store at Lima, Ohio, was recently robbed of a small quantity of Knives and Revolvers.

That Gebzer & Hacker of Charleston, S. C., are opening up a new stock of general Hardware at Bartow, Fla.

That Littlefield & Seavey, Hardware dealers at North Conway, N. H., have dissolved partnership. The business will be continued by O. E. Littlefield at the old stand.

That Binkley & Welsh's Hardware store at Dayton, Ohio, was burglarized on September 24. Goods to the value of \$70 were stolen.

That A. J. Harris, Jackson, Miss., who has been sole proprietor of the Hardware house known as A. J. Harris & Co., has admitted to partnership his younger brother, M. H. Harris, Jr. The style of the firm will remain as before.

That Jones Bros. have opened a new Hardware store at Coon Rapids, Iowa.

That W. H. Crooker has purchased the Hardware stock and fixtures of W. H. Hislop, dealer in Hardware, Unadilla, N. Y.

That R. S. Walker & Co., Fort Wayne, Ind., are erecting a large building to accommodate their increasing Hardware and Implement trade.

That Thomas B. Wren has commenced the Hardware business at San Antonio, Texas.

That George F. Blake, Jr., and George S. Boutwell, who have been in partnership in the Iron and Metal business at Worcester, Mass., dissolved business on

#6 - 6	
Bissell Carpet Sweeper Co.	
RECEIVED	
Grand Rapids, Mich., July 15 th 1890.	
From <i>James Moore & Co.</i>	
<i>Chicago</i>	
Via <i>Mich. Central</i>	
MEMORANDUM	DISPOSAL
1 coil iron rope 120 ft x 5/8" x 19	#4
Received by <i>Geo. Johnson</i>	

Fig. 6.—Record of Goods Received.

call attention to the essential points to be observed, otherwise the wrong goods may be sent and annoying delays the result.

BUSINESS PERIODS.—There are certain times of the year when there is a greater demand for certain articles than at others. The buyer must learn to figure on these and place his orders before the demand begins to affect prices.

PRICE, FREIGHTS AND DISCOUNTS.—Before placing an order, the terms of settlement should be mutually understood. Be sure to get the benefit of the lowest possible freight classification. If water freights are an object, they should be considered.

KEEP A RECORD OF EACH ORDER.—It is often desirable to refer to an article and find out how an order is progressing; how much to order to last a specified time, how long it takes to get goods after the order

buyer's desk with ordinary thumb tacks. When an urgent order is placed it is noted on the card; when filled it is then crossed out. By this plan the buyer has a complete list of all pressing unfilled orders where it cannot be lost and yet where it is constantly under his notice.

RECEIPT OF GOODS.—Be sure and get all a bill calls for in quantity as well as quality. It is a poor purchase where 100 pounds are paid for and only 95 pounds received, or where first grade goods are paid for and second grade received. To avoid errors of this kind, and also furnish a convenient report of goods received for use in checking bills, a form similar to that illustrated in Fig. 6 can be used to advantage.

Payment of Bills.

Before a bill is "O. K'd," too much care cannot be taken in seeing that the

the 26th ult., Mr. Blake purchasing Mr. Boutwell's share. Mr. Boutwell will remain in the employ of Mr. Blake, who will continue as sole manager of the business.

That E. G. Clough has commenced the Hardware business at Winchester, Mass. Charles H. Kimball will manage the business.

Exports.

PER BARK SELKIRKSHIRE, SEPTEMBER 29, 1891
FOR SYDNEY, N. S. W.

By Hartley & Graham.—1 case Fire Arms.
By Joseph F. McCoy Company.—8 packages Agricultural Implements.
By Meriden Britannia Company.—12 barrels Silver-Plated Ware.
By the Fairpoint Mfg. Company.—1 cask Silver-Plated Ware.
By Meriden Britannia Company.—16 packages Silver-Plated Ware.
By H. Herrmann.—6 dozen Axes.
By E. W. Harrison.—1 case Sandpaper, 3 boxes Emery Wheels, 1 box Hardware.
By Rogers, Smith & Co.—5 casks Silver-Plated Ware.
By Winchester Repeating Arms Company.—8 cases Guns, 2 cases Tools, 2 cases Primers.
By W. & B. Douglas.—3 boxes Pumps.
By W. K. Freeman.—6 barrels Lamp Goods, 25 dozen Axes, 6 Lawn Mowers, 3 cases Tools, 1 package Drills.
By F. & J. Meyer.—1 case Razor Strops, 21 cases Tools, 9 dozen Hoes.
By Healy & Earl.—10 packages Saws, 1 case Emery Wheels, 2 dozen Barrows, 2 boxes Hardware, 1 box Metal Polish.
By Hartley & Graham.—100,000 Cartridges, 1 case Fire Arms, 4 cases Cartridges, 1 case Empty Cartridge Shells, 1 case Fire Arms, 1 case Hardware.
By Strong & Trowbridge.—7 cases Tools, 1 case Screw Drivers, 1 case Hardware, 2 cases Bolts, 1 case Revolvers, Rifles, &c., 2 cases Scales, 4 cases Braces, 1 case Locks, 1 case Hardware, 1 case Lampware, 2 cases Hardware, 3 cases Boring Machines, 1 case Washers, 1 case Revolvers, &c., 4 packages Hardware, 1 barrel Lampware, 3 packages Pumps, 1 case Axes, 1 case Chucks, 1 case Bench Stops, 3 cases Chucks, Drills, &c., 1 case Braces, 5 packages Hardware, 7 packages Wheelbarrows, 4 packages Wringers, 9 cases Tools, Guns and Cartridges.

PER BARK ELINOR VERNON, SEPTEMBER 29, 1891, FOR DUNEDIN, NEW ZEALAND.

By William Lunham.—7 packages Agricultural Implements.

FOR AUCKLAND.

By Edward Miller & Co.—20 packages Lamp Goods.
By Chas. M. Terry.—1 box Plows.
By Arnold, Cheney & Co.—50 kegs Wire Nails, 11 crates Washing Machines.

PER BARK OSMAN PASHA, SEPTEMBER 30, 1891, FOR BRISBANE, QUEENSLAND.

By H. W. Peabody & Co.—27 packages Plows, &c., 9 packages Hardware, 1 case Emery Wheels.
By R. W. Forbes & Son.—1 box Lampware, 13 packages Hardware.
By Moxler & Quereau.—100 cases Axes.
By H. W. Peabody & Co.—573 pounds Wheels, 10,000 Cartridges, 130,000 Primers, 22 dozen Wrenches, 3 cases Lampware, 73 packages Hardware, 2 cases Stencils, 6 cases Guns, &c., 2 cases Traps, 1 case Hair Clippers, 1 case Air Guns, 1 case Hardware, 500 pounds Horse Nails, 4 packages Hardware, 1 case Bird Cages.
By Arkell & Douglas.—346 reels Wire, 4 racks Churns, 1 case Ladders, 23 cases Tacks, 1 case Agricultural Implements, 6 packages Lampware, 2 cases Axes, 3 cases Lawn Mowers, 21 cases Hardware.

PER BARK LOYALIST, SEPTEMBER 30, 1891, FOR PORT NATAL, SOUTH AFRICA.

By W. H. Peabody & Co.—8 dozen Hatchets.
By John Norton's Son.—1 case Corn Mills.
By Collins & Co.—12 boxes Picks.
By W. H. Crossman & Bro.—36 cases Hardware, 12½ dozen Sash Cord, 10 cases Agricultural Implements and 19 packages Parts, 53 cases Hardware, 800 reels Barb Wire.
By Coombs, Crosby & Eddy.—2 cases Plows, 1 dozen Pumps, 7 dozen Edge Tools, 2 dozen Hay Knives, 12 dozen Wrenches, 18 dozen Drills, 10½ dozen Tools, 101 cases Plows, 21 Corn Shellers, 3 racks Ladders, 4 cases Choppers, 1 case Ice-Cream Freezers, 4 cases Lawn Mowers, 108 dozen Tacks, 5 cases Wringers, 6 crates Washers, 15 cases Bird Cages, 1 case Ladders, 5 cases Picks, 1 case Tools, 1 case Mangies, 3 packages Traps, 5

crates Refrigerators, 5 crates Hatchets, 1 case Carpenters' Tools, 1 case Hay Rakes, 2 packages Lawn Mowers, 2 cases Cultivators.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

The past week has witnessed very little change in the condition of the market for any line of Paints or Colors. Recent surface disturbance caused by the break in Linseed Oil prices seems to have passed away without creating the commotion that had been looked for in some quarters, and the gossip about formidable opposition to the Lead Trust has also ceased to possess attraction. About the only new feature is a rise in the foreign price of Quicksilver, which if carried further may bring about a change in values of Quicksilver Vermilion, but this amounts to very little as a factor up to the present time.

White Lead.—Corrodors express satisfaction with the manner in which orders have been coming along during the past week and manufacturers of the cheaper varieties of pigment also claim to have experienced a very fair trade, while jobbers, judging from their own statements, have nothing to complain of. In short, it would appear that weather conditions have been of valuable assistance all along the line, through admitting of almost uninterrupted work in which the spread of Paint is involved. Manufacturers' prices have undergone no changes whatever and jobbers have deviated in no marked degree from the line of action followed for some time past.

Zincs.—Orders for domestic brands of Oxide have been coming in at a very fair rate and the consumption, to all appearances, is keeping well up to the average. There is no friction in any quarter nor change in the situation of the market for base material. Prices therefore remain steady and unchanged. Importers are bringing foreign brands this way only in such quantities as the outlet fully warrants and prices for these as well as for the domestic product remain stationary.

Colors.—About the only feature in this line is a revival of interest in English Vermilion, brought about by signs of an upward movement in the price of Quicksilver. Up to the present time the associated manufacturers have made no changes, however, and outside firms are following their customary course. Dry Colors in general have met with very fair sale, as have also Oil Colors, and the trade in ready-mixed Paints is represented as being up to the average for the season.

Miscellaneous.—Block Chalk has undergone no change, buyers and sellers still being about 25¢ per ton apart on price. Whiting remains very steady in price at the old figures, with a fair business passing. The same may be said of Paris White. Clays generally are steady at old prices, but rather slow.

Oils and Turpentine.

No features of striking interest have come to the surface in this line during the past week. Business has run along in about the routine manner, buyers have followed a conservative policy and sellers have done likewise. Uncertainties surrounding the Linseed situation are given close attention, as are also those common to the Cotton Oil trade at this season of the year, but in neither line has anything taken place from which either buyer or seller can claim any decided advantage. As for the balance of the list, there is nothing to remark except that normal conditions prevail.

Linseed Oil.—Prices of seed in the West have averaged somewhat higher, and that circumstance has served to check the pressure of Western Oil for sale in some degree at this point. Previous to the turn in the seed market Oil was sold at as low as 35¢ delivered here, in carload lots; but at this writing there do not appear to be any offers at less than 36¢, and very few at under 37¢, while some agents refuse to accept any additional orders for the time being. City pressers hold their prices at 40¢ for domestic and 56¢ for Calcutta seed product, reporting an increase in sales of the latter during the past few days.

Cotton-Seed Oil.—Exporters have placed few and only unimportant orders for refined product, and the dealings in crude have been confined chiefly for parcels to be shipped to Mexico in time to enter under the old duty. Home consumers are buying in an extremely conservative manner, and the market is wholly devoid of the vigor that usually exists at this season of the year. Prices have undergone no special change.

Fish Oils.—There have been no new developments in the market for crude Menhaden Oil, and the refined products, while very firmly held, are rather slow. The Pressed and Bleached products are firm at the recent advance. About 1000 barrels of crude Sperm Oil have been sold in the New Bedford market, part at 68¢, and the refined Oils have had fair jobbing movement here at about former rates. Whale Oils are wholly unchanged.

Miscellaneous.—Lard Oil has remained almost stationary in price and met with about the usual sale. Olive and Palm Oils unchanged. Ceylon Coconut Oil went to as low as 5½¢ for future shipment, but is held at 6½¢ upward on the spot.

Spirits Turpentine.—Prices are a fraction lower under the influence of limited demand and full supplies. Wholesale quantities are readily secured at 37½¢ @ 37¾¢, as to style of package.

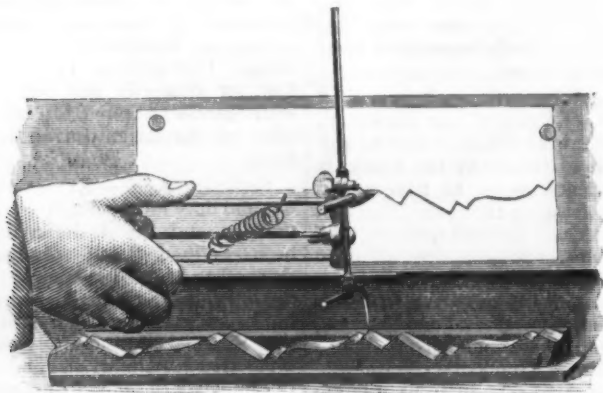
Hoosick Falls, N. Y., is soon to have a new industry. It is said that the Hon. Walter A. Wood is contemplating the purchase of 25 acres of land, upon which he will erect a factory for the manufacture of grass twine and machines for making the same. Geo. A. Lowry of Des Moines, Iowa, is the inventor of the machine. Mr. Lowry has been a resident of Hoosick Falls for some months, engaged in perfecting his wonderful invention. The machine for making twine and rope out of grass will be a benefit to the farmer and is likely to revolutionize the business. The great Twine Trust is said to have offered Mr. Lowry \$260,000 for his patents. Mr. Lowry is also the inventor of the hog-scraping machine used in all the great pork packing factories, which will scrape 500 hogs an hour. The Champion Company of Springfield, Ohio, the W. A. Wood Company and the inventor are interested in the new twine machine. By it grass twine can be supplied for 2½ cents per pound. The machine is simple and easily run. Two girls can manage it and turn out 150,000 yards of twine in a day. A good rope can be manufactured for 1 cent a pound. The new industry will probably be a part of the Walter A. Wood Mower and Reaping Machine Company, and operated under the direction of the Board of Directors. Mr. Warren and Mr. Wood of the company will leave for the West this week, with a view to taking the preliminary steps toward establishing the plant.

The net profits of the companies in the American Wringer Company have been \$251,667.94 in 1888, \$254,190.82 in 1889 and \$275,164.12 in 1890.

Potter's Patent Scriber.

Kolesch & Co., 155 Fulton Street, New York, are introducing a scriber, as illustrated herewith. This consists of a plate having a flange along its lower edge, with a slot through the plate parallel with its

the tooth of the saw to not more than the desired depth. On the side of the gauge is plainly marked the proper adjustment for each toothed saw, so that a person cannot knowingly attempt, for instance, to set a ten-point saw with a four-point adjustment. The anvil is held in place by a



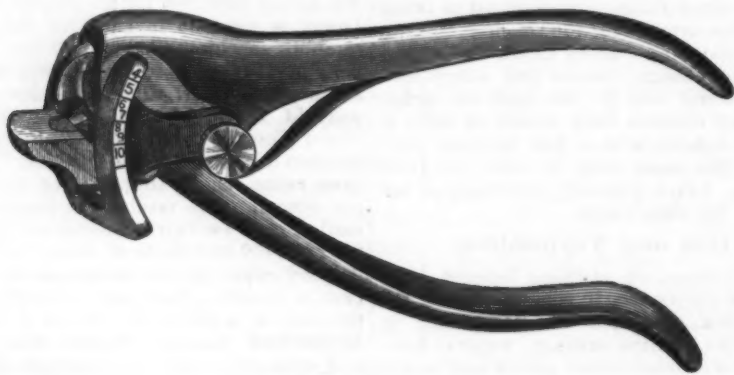
Potter's Patent Scriber.

upper and lower edges. Two parallel rods are pivoted on plates at both ends, with an adjustable spiral spring between them. The plate at one end of the rods is held on the larger plate by a thumb screw which passes through the slot, while the plate at the opposite end is provided with a thumb screw, which holds an upright rod in position. This rod has two steel points, the upper one being adjustable and the lower one stationary. The scriber is made of brass and steel, every necessary adjustment being afforded by the thumb screws. The device is designed to reproduce an exact *fac-simile* of profile of a molding, panel, ornament, &c.; to reproduce the exact shape of a piece of new work to match the old; to insure a perfect fit where pieces, however intricately shaped, are to be joined, and for laying out profiles and making fits. As shown in the cut, the inequalities of the surface are followed by the lower point, and reproduced on the paper by the upper point. The above firm recommend it to cabinet makers, carpenters, joiners, stairbuilders, millwrights, shipbuilders, stone and marble workers, mechanics, artisans, &c.

Lloyd Acme Saw Set.

The Wm. Lloyd Mfg. Company, Twenty-second street and Washington avenue, Philadelphia, Pa., are introducing this

saw are in sight, except the one being set. The advantages referred to are the extreme simplicity of the set and the ease of adjustment. It is claimed that it is not easily broken; that it will not slip, and that the peculiar action makes it not liable to break



Lloyd Acme Saw Set.

article, as illustrated herewith. It is referred to as simple in construction, having practically only three parts—i. e., frame, lever and gauge. These are made of steel and malleable iron, while the anvil is of Stubbs steel. The face of the gauge forms an eccentric circle held in place by thumb screws, and as moved up or down admits

the teeth. Should any parts break they will be replaced by the manufacturers free of charge.

A deep rock excavation is making on the corner of Seventy-second street and Eighth avenue, facing the park, prepara-

tory to erecting the Hotel Majestic, a 12 story structure, building by Jacob Rothchild and others, and which will cost \$3,000,000. The ground dimensions are 204 x 139 feet.

Improved Straight-Feed Closer.

The Bridgeport Gun Implement Company, 313 and 315 Broadway, New York, are putting on the market an improved shell crimper, as illustrated herewith. The lever handle, which is seen at the top of the cut, is pivoted at the left of the tool, and is used to throw the shell forward. The improvements consist, first, in the substitution of a plate in place of a cap at the left of the machine. When using the cap bushings had to be introduced to accommodate the various sizes of shells. With the present plate it is only necessary to turn one end or the other to the shell, according to the necessity of the case. The other improvement is a new form of cradle, in which the shell rests, the parts of which are hung upon the side rods. Pieces of metal of the required curve to conform to the different size shells are laid against the sides of the cradle and held in place by teats. The edges of the cradle in the former closer were undesirable, as they creased the shell. The machine is also made with a fly wheel, and may be run by power or hand. At-



Improved Straight-Feed Closer.

tention is directed to the advantage of these closers having a straight feed, which avoids the shell being fed to the closer at an angle.

The Ideal Loading Flask.

Ideal Mfg. Company, New Haven, Conn., are offering the trade a flask, as illustrated herewith. This consists of a nickel-plated cylinder 7 inches in length and 2 inches in diameter, with loading and discharging tubes, and a cut off on one end. It will hold $\frac{1}{4}$ pound of powder, and will measure powder in any required number of grains from 3 up to 135. It is also graduated in drams, from $\frac{1}{4}$ to 5 drams. It is claimed that the drop tube and shaker enables the user of this flask to get more powder in a given space in a shell than can be done in any other way except by much greater expenditure of time, or by compressing and crushing the grains to an extent that is destructive of uniform and accurate shooting; also that there is no powder exposed in an open vessel, no spilling while pouring into the shell, as the muzzle of the shell fits the receptacle at the bottom. The following instructions for filling the flask and for filling the measure will serve to give an understanding of the workings of the flask: To fill the flask, remove the tube A, insert a paper or other funnel into

the tube B, and with the thumb press the cut off E in the direction of arrow point as far as it will go; this will bring the tube B over the port hole D (shown in dotted lines) and in connection with the interior of the flask. After filling, the removal of the thumb will cause the cut off to resume its normal position, which is between the port of entrance to the measure D and the port of delivery, the tube C C. If a smaller charge than 70 grains or $2\frac{1}{2}$ drams is required, insert the tube A with the sealed end downward as far as required and turn slightly to the right to tighten it. If a greater than the above is required, insert the open end of the tube A. To fill the measure, turn the flask upside down; hold in a perpendicular position; with the thumb, turn the cut off E as when filling the flask. Hold in that position long enough for the measure to fill and remove the thumb while in that position; turn the flask right side up and place the muzzle of the empty shell in the receptacle G at the bottom, holding it up snugly, and turn the cut off E over the hole C, and the powder will fall from the measure through the drop tube C C into the shell. While it is falling twirl the receptacle G with the shell and the teeth I will strike the cams H H and jar the powder to place while falling. It is stated that the operation is simple and much quicker performed than the time taken to describe it, and that a few minutes will suffice to accustom one to the operation. The flask is made in two sizes, of brass

position relatively to tipping endwise; also that the greater part of the elasticity of the front or lower springs is derived from the torsional branches at their for-

ward ends. The front ends of the upper springs are connected by spring bars, arranged crosswise of the body, just below the front edge of the seat, and are covered



Fig. 2.--Showing the Arrangement of Springs.

ward ends. The front ends of the upper springs are connected by spring bars, arranged crosswise of the body, just below the front edge of the seat, and are covered

complete is but 23 pounds, and it is claimed that they will safely carry a load of 450 pounds, and provide for a vertical depression of $6\frac{1}{2}$ inches.



The Ideal Loading Flask.

throughout, finely polished and nickel plated. No. 1 is for loading shells from 38 to 50 caliber; No. 2 from 38 to 22 caliber.

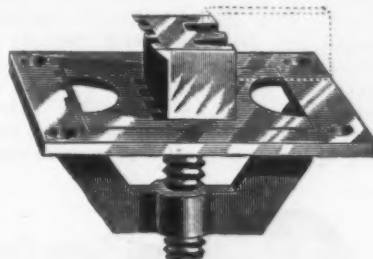
Morse Compensating Cart Springs.

Morse Spring Company, Trumansburg, N. Y., are offering springs, as illustrated in Fig. 1. The dotted lines represent the depression of the springs and body under a load. Fig. 2 shows that the back springs are arranged considerably above the front springs, and that the latter, instead of being secured to the axle and extending forward, are rigidly attached to the thills and extend toward the axle, near which they are attached by means of side-bar shackles to a rider bar, which is secured to the body by malleables. The point is

by the cushion curtain. It is claimed that in these springs all horse motion is overcome, and that the resistance to the endwise tipping of the body increases with the load. The manufacturers state that in these springs advantage is taken of the facts that while the body is most liable to horse motion when lightly loaded or when the movement of inertia of it and its load is the least, the want of stability is always felt when the body is most heavily

The Peerless Bench Stop.

Dicks & Wiggim Company, Dayton, Ohio, are introducing the above article, as illustrated herewith. The head is of



The Peerless Bench Stop.

malleable iron, with slots on opposite side from the teeth, which when reversed are designed to hold strips from $\frac{1}{4}$ to $\frac{1}{2}$ inch

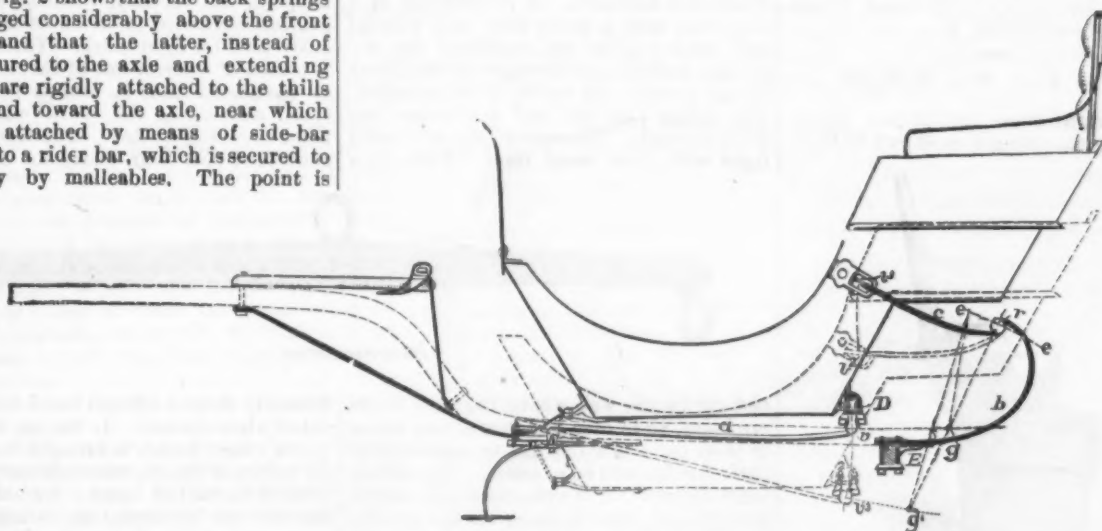


Fig. 1.--Morse Compensating Cart Springs.

made that by this arrangement the springs have a very narrow base lengthwise of the gear, and the vertical distance between them is used to hold the body in a horizontal

loaded. They further state that the springs give the necessary gentle resistance to the vibratory motion of the thills under a light load, and also the necessary greater

in thickness edgewise while being dressed, as shown by the dotted lines. The shank of the head is threaded, and after removing the lock plate with the thumb and

forefinger the head piece may be turned either way, thus raising or lowering it as desired. The lock plate is again replaced, which holds the head piece in position. The advantages claimed for the stop are that there is no set screw, spring or eccentric required to hold the head piece in position; that no tool is required to raise or lower the head, and that dust and shavings cannot collect under the head, as the opening is sufficiently large to allow all such matter to fall through to the floor.

Handy Ratchet Screw Driver.

Augusta Machine Works, Augusta, Maine, are offering the trade a screw driver, as illustrated in Figs. 1 and 2. It has a pawl in the handle, by simply touching which lightly with the finger, without changing the position of the tool in the hand or removing the blade from the screw, it may be operated to turn a screw in or out. The ratchet, pawl and all working parts are made from steel, the

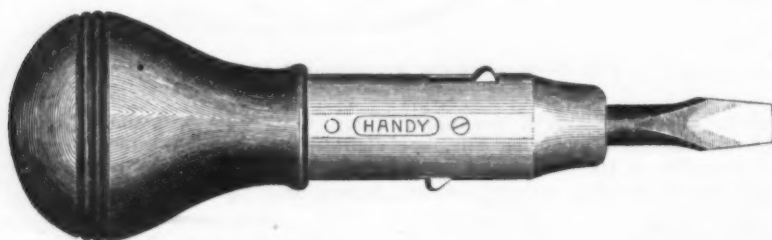


Fig. 1.—Pocket Handy Ratchet Screw Driver.

blades hand forged from special steel, and all parts are well proportioned and nicely finished. It is claimed that it combines strength and durability with elegance of style, and that for rapidity and ease or convenience of operation it is excelled by none. Fig. 1 shows the pocket screw driver three-quarters size, its actual size being 5½ inches over all. Five other sizes



Fig. 2.—Handy Ratchet Screw Driver.

are made, having 4, 5, 6, 7 and 8 inch blades, as shown in Fig. 2.

The So Easy Mop Wringer.

J. C. Wright & Co., Fitchburg, Mass., are offering the wringer, as shown in Figs.



Fig. 1.—The So Easy Mop Wringer.

1 and 2, as selling agents. It is referred to as being substantially and durably made, quickly adjusted and not in the way

on the pail, easily operated, wringing either a large or small sized mop of any



Fig. 2.—The Mop Wringer Closed.

material equally well, and as having the advantages of other wringers at a less price.

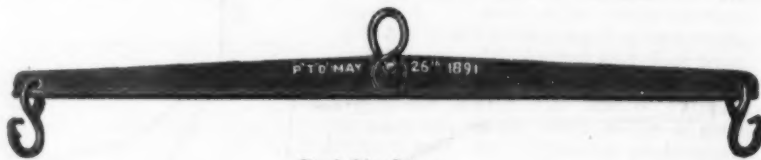
Milk Kettle.

Sidney Shepard & Co., Buffalo, N. Y., are putting on the market a new milk kettle, in sizes from 1 to 8 quarts, which is manufactured by special machinery. It is pointed out that by the use of special ma-

chinery they secure accurately fitting covers, which is an important feature with this article, and which it is difficult to obtain in hand-made milk kettles.

Steel Singletree.

The Southern Agricultural Works, Atlanta, Ga., are introducing a singletree, as



Steel Singletree.

illustrated herewith. It is made out of a steel bar, with a heavy head and a broad web, which gives the singletree the necessary stiffness and strength to admirably fill the purpose for which it is intended. The center clip and end hooks are also made of steel. The center clip is riveted tight with a soft steel rivet. There is a

The difficult feat of lengthening a large iron ship 36 feet, by inserting a new section amidships, is to be performed by

the William Cramp Sons' Shipbuilding Company in Philadelphia. The steamer belongs to the Red D line, between New York and Philadelphia, and measures 269 feet. The change will enlarge her capacity 700 or 800 tons.

Blacksmiths' Upright Drill.

An upright drill possessing several novel characteristics has been placed on the market by Asa Goddard of Worcester, Mass., and of which we present herewith an engraving. As will be observed, it is made unusually heavy and all parts subjected to



Blacksmiths' Upright Drill.

strain are strongly braced with heavy ribs. It is easily capable of performing the heaviest kind of work for which it is adapted, and yet may, with the system of gearing embodied in it, be as advantageously used for light work. The fly wheel is placed at the rear out of the way and is so connected that it attains its highest speed relative to the work while large holes are being drilled. The feed is automatic and has four changes. It can be

instantly thrown off and hand feed substituted when desired. It has an automatic quick return which is brought into action by means of the thumb screw conveniently located to the left hand. By this device the drill can be carried up to any desired point and made fast ready for the next hole, thereby giving the operator complete control of the machine without stopping it and without taking his hand from the crank. The machine will drill from ¼ to 1½ inch holes 5 inches deep to the center of a 16 inch circle. The total length is 60 inches and the weight 235 pounds

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., October 6, 1891.

The Secretary of the Navy has directed the chiefs of bureaus to submit their annual reports to him by the 15th of the present month. One of the most interesting and valuable of these bureau contributions to the official history of the past year in naval affairs will be the report of Engineer-in-Chief Melville. The report will be voluminous with a *résumé* of all the work of preceding years of naval construction and many engravings illustrative of the text.

In conversation with the correspondent of *The Iron Age*, Chief Melville said: "During the past ten years the whole system of marine engines has been revolutionized and developed. Many vital principles in the requirements of modern engines have been determined, but the possibility of a sectional or coil boiler still remains an unsettled engineering problem.

"The practical application of the theory of expansion is limited to a certain extent by the weight, which would be overcome in the sectional or coil boiler.

"Oh, yes, we are practically ahead on the application of the triple-screw engines. The only predecessor of our No. 12 cruiser, or the Pirate, as we call her, is on the Du Puy De Lome of the French Navy, but the French boat is not liable to be launched before our No. 12. It is true that many of the Italian torpedo boats are worked with triple screws, but they are only tentative."

"Will the triple-screw engine come into general use?"

"We think now that two screws are a good type for the general ships of a navy. The triple screws are only serviceable for special purposes. The science of steam engineering must move forward slowly; otherwise very serious and expensive mistakes might be made."

"Is our speed up to the progress on other lines?"

"Quite so. The best speed was made by the San Francisco, built by Scott of San Francisco. She made 20.6 knots or about 24 miles an hour under four hours' trial. The hull was designed by the Bureau of Construction, and the engines by the Bureau of Steam Engineering. The cruisers 7 (Cincinnati) and 8 (Raleigh), will have engines of 10,000 horse-power in ships of 3000 tons. They are designed for 20, but we expect 21 knots. The hull of the former is being built at the New York and the latter at the Norfolk Navy Yards. The machinery and boilers for both are being built at the New York yard. The reason the secretary ordered these ships built in the navy yards was because no contractors bid for hulls and machinery within the limits of the appropriation. Both Chief Constructor Wilson and myself knew that they could be built inside the sums appropriated; we believe, now that they are well under way, that they can be built for less."

"How is the Texas progressing at Norfolk?"

"We expect to launch her this fall. The machinery is being built at the Richmond Locomotive and Machine Works. We believe there is no question the Texas, which is an English model, can carry her weights, but the English designer figured her very close. There was not, according to our idea of safety, a wide enough margin for extra weights.

"The engines for the Maine, 9000 horse-power, are being erected on board. The bureau just now is overloaded with the details of all the ships building. The original designs are finished, but the details must be taken care of."

"How do we rate in the progress with other nations?"

"We are keeping pace in steam engineering with other great naval powers. Some of our engines are superior to any of theirs. Irving Scott, the San Francisco shipbuilder, who returned a few weeks ago from a trip to Europe, makes a statement that when in the principal yards of Great Britain he observed almost a counterpart of the machinery of the Maine being erected for an English ship. This was four years after we made the design for the Maine.

"I might have added, in reference to sectional or coil boilers, that they would make practicable very high pressures of steam and consequently higher grades of expansion with safety from explosion on small weights.

"We have only one torpedo boat (No. 2) under contract. There is nothing new or special in the design of her engines, as they are principally copies of the best types of machinery of English and German engines. The details of the machinery of this boat are of the Yarrow and Thornycroft models."

The Engineer in Chief is strong in his praise of his assistants in his great work. It is evident when the engineers assigned do not come up to standard he puts them aside. He wishes none but the best in order to carry out the policies of advance. The four years' term of Chief Melville will expire in January, but Secretary Tracy has indicated his intention to have him renominated to the Senate for reappointment for another term of four years. He was originally appointed by Secretary Whitney, under whom he served for one year and under Secretary Tracy for three years.

PERSONAL.

Moritz Boeker, the Remscheid steel manufacturer, who has been visiting works in this country, has returned to Germany.

F. C. Lewis, formerly engineer of the Youngstown Bridge Company, Youngstown, Ohio, has accepted a position as chief engineer for the Columbus Bridge Company, Columbus, Ohio.

H. W. Spaulding of Grinnell, Iowa, A. T. Hamilton of the Etna Furnace, Georgia, and James F. Lewis of the Rand Drill Company, New York, are proposed for membership of the Iron and Steel Institute.

George W. Goetz, the well-known metallurgist, of Milwaukee, has returned recently from a visit to all the principal basic plants of Germany, Austria, France and England. He also spent some time in Sweden.

The English World's Fair Commissioners, Sir William Truman Wood and James Dredge, editor of *Engineering*, sail for home this week.

George D. Chamberlain has resigned his position as first assistant chemist of the Laughlin and Junction Steel Company, Mingo Junction, Ohio, to accept the position of chemist for the Max Meadows Iron Company, Max Meadows, Va., whose furnace is soon to go into blast.

E. C. Crowther has accepted the management of the Norton Iron Works, at Ashland, Ky.

Meyers Coryell has returned from a four months' stay in France, where he studied the work of the Belleville boiler.

The Orford Copper Company of New York are making a nickel oxide carrying about 75 per cent. of nickel, which some steel makers use direct, while others make an alloy with iron. The price of the oxide is 40 cents per pound for the nickel contained.

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OCTOBER 7, 1891.

Churns.
Tiffin Union, each, 5 gal. \$3.25; 7 gal., \$3.75; 10 gal. \$4.25.
McDermald Star Barrel Churn, each, 6 gal., \$3.00; 10 gal., \$2.75 15 gal.

Clamps—
R. I. Tool Co.'s Wrought Iron.....25¢
Adjustable, Cincinnati.....15¢10¢
Adjustable, Hammers.....15¢
Adjustable, Stearn's.....30¢30¢10¢
Stearns' Adjustable Cabinet and Cor-
ner.....30¢30¢10¢
Cabinet, Sargent's.....70¢10¢
Carriage Makers', Sargent's.....70¢10¢
Carriage Makers', P. S. & W. Co. 40¢10¢
Eberhard Mfg. Co.....40¢25¢40¢10¢
Parallel, C. H. Bealy & Co.....25¢
Warner's.....40¢10¢40¢10¢5¢
Saw Clamps, see Vises, Saw Filers'.
Carpenters', Cincinnati.....25¢10¢

Cleavers.
Butchers'.
Bradley's.....25¢30¢
L. & J. White.....30¢25¢
Beatty's.....40¢40¢25¢
New Haven Edge Tool Co.'s.....40¢
P. S. & W. Co.....35¢40¢35¢10¢
Foster Bros.....30¢
Schulte, Lohoff & Co.....40¢40¢25¢

Clips—
Norway, Axle, 1/4 & 5-16.....55¢25¢5¢
And grade Norway Axle, 1/4 & 5-16 65¢25¢
Superior Axle Clips.....65¢25¢70¢
Norway Spring Bar Clips, 5-16.....65¢25¢5¢
Wrought-Iron Felloe Clips.....P. S. 5¢
Steel Felloe Clips.....P. S. 5¢
Baker Axle Clips.....25¢

Cloth and Netting, Wire—See
Wire, &c.

Cockeyes.....50¢

Cocks, Brass.....50¢25¢

Hardware list.....50¢25¢

Coffee Mills—See Mills, Coffee

Collars, Dog, &c.
Medford Fancy Goods Co.....40¢10¢
Embossed, Gift, Pope & Steven's list.....30¢10¢
Leather, Pope & Steven's list.....40¢
Brass, Pope & Steven's list.....40¢
Chapman Mfg. Company.....50¢10¢60¢

Combs, Curry.
Fitch's.....50¢10¢50¢10¢10¢
Rubber, per doz \$10.00.....20¢
Perfect.....60¢
Kellogg's.....50¢10¢
Sweet & Clark's.....50¢10¢

Compasses, Dividers, &c.—
Compasses, Dividers, Dividers, 70¢70¢10¢
Bemis & Call Co.'s.....60¢25¢
Dividers.....60¢25¢
Compasses & Calipers.....50¢25¢
Wing and Inside or Outside.....50¢25¢
Double.....60¢
(Call's Pat. Inside).....60¢
Excelsior.....50¢
F. Stevens & Co.'s.....25¢10¢
Starrett's.....25¢10¢
Spring Calipers and Dividers.....25¢10¢
Lock Calipers and Dividers.....25¢
Combination Dividers.....25¢

Coopers' Tools—See Tools, Coopers'.

Cord—
Sash.
Common.....P. S. 10¢ @ 11¢
Patent, good quality.....P. S. 12¢ @ 13¢
White Cotton Braided, fair.....P. S. 24¢ @ 25¢
Common Russia Sash.....P. S. 12¢ @ 13¢
Patent Russia Sash.....P. S. 14¢
Cable Laid Italian Sash.....P. S. 21¢ @ 22¢
India Cable Laid Sash.....P. S. 12¢
Silver Laid.....25¢
A Quality, White, 50¢.....25¢
A Quality, Drab, 50¢.....25¢
B Quality, White, 30¢.....10¢
B Quality, Drab, 35¢.....10¢
Sylvan Spring Extra Braided White, 34¢
Sylvan Spring Extra Braided, Drab, 30¢
Semper Idem Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Massachusetts, White.....25¢
Samson.....30¢
Braided, White Cotton, 50¢.....30¢30¢5¢
Braided, Drab Cotton, 55¢.....30¢30¢5¢
Braided, Italian Hemp, 55¢.....30¢30¢5¢
Braided, Linen, 80¢.....30¢30¢5¢
Tate's Cotton Braided, White.....P. S. 28¢

Wire Picture.
Braided or Twisted.....75¢10¢

Corkscrews—See Screws, Cork.

Corn Knives and Cutters—See
Knives, Corn.

Crackers, Nut—
Table (H. & B. Mfg. Co.).....40¢
Blake's Pattern.....P. S. 20¢, 10¢
Turner & Seymour Mfg. Co.....50¢

Cradles—
Grain.....50¢25¢20¢50¢10¢25¢

Crayons.
White Crayons, P. gross.....10¢
D. M. Stewart Mfg. Co., Metal Work-
ers, P. gr. \$2.50.....25¢
D. M. Stewart Mfg. Co., Rolling Mill,
P. gr. \$2.50.....25¢
See also Chalk.

Crow Bars—See Bars, Crow.

Curry Combs—See Combs, Curry.

Curtain Pins—See Pins, Curtain

Cutters—
Meat.
Dixon's P. dos.....40¢25¢
Nos. 1 2 3 4 5
\$14.00 \$17.00 \$19.00 \$30.00
Woodruff's P. dos.....40¢25¢
Nos. 1 2 3 4 5
\$15.00 \$18.00
Hales Pattern P. dos.....70¢70¢25¢
Nos. 1 2 3 4 5
\$27.00 \$38.00 \$45.00

American.....30¢
Nos. 1 2 3 4 5
Each.....\$5 \$7 \$10 \$25 \$50 \$60

Enterprise.....30¢
Nos. 10 12 13 22 32 42
Each.....\$3 \$2.50 \$4 \$6 \$11

Great American Meat Cutter.....30¢
Nos. 112 116 118 120 122
Each.....\$2.00 \$2.75 \$3.00 \$2.50 \$4.00

Miles' Challenge P. dos.....45¢45¢10¢
Nos. 1 2 3 4 5
\$22.00 \$30.00 \$40.00
Hans No. 1.....P. dos \$30.00, 50¢10¢

Draw Cut, each:
Nos. 5 6 8
\$50 \$75 \$80 \$225.....20¢25¢
Great American.....30¢
Beef Shavers (Enterprise).....30¢10¢30¢
Little Giant (P. S. & W. Co.).....50¢
Chadborn's Smoked Beef Cutter, P. dos
\$60.00

Tobacco.
Champion.....20¢10¢30¢
Wood Bottom.....P. dos \$5.00 @ \$5.25
All Iron.....P. dos \$4.25
Nashua Lock Co.'s.....P. dos \$18.00 50¢55¢
Wilson's.....55¢
Sargent's.....P. dos \$24, 55¢10¢
Acme.....P. dos \$30.00, 40¢

Washer.
Smith's Pat.....P. dos \$12.00, 20¢10¢10¢
Johnson's.....P. dos \$11.00, 33¢4¢
Penny's P. dos Pol. \$14; Jap'd, \$16.00, 55¢
Appleton's.....P. dos \$16.00, 60¢10¢
Bonney's.....30¢10¢
Cincinnati.....55¢10¢

Dampers, &c—
Dampers, Buffalo.....40¢10¢
Buffalo Dampers Clips.....40¢10¢
Crown Dampers.....40¢
Excelsior.....40¢10¢

Diggers, Post Hole, &c.—
Samson Post Hole Digger, P. dos \$36.00,
25¢
Fletcher Post Hole Augers, P. dos \$26, 20¢
Eureka Diggers.....P. dos \$12.50 @ \$14.00
Lead's.....P. dos \$8.00 @ \$9.00
Vaughan's Post Hole Auger, P. dos
\$15.00 @ \$16.00
Kohler's Little Giant.....P. dos \$18.00,
Kohler's Hercules.....P. dos \$18.00,
Kohler New Champion.....P. dos \$9.00,
Schiedler.....P. dos \$18.00,
Ryan's Post Hole Diggers.....P. dos \$24.00,
Cronk's Post Bars, P. dos \$60.00,
50¢25¢50¢10¢
Gibbs Post Hole Digger, P. dos \$30.00, 50¢
Imperial, P. dos \$15.....45¢

Dividers—
See Compasses.

Dog Collars—See Collars, Dog, &c.

Door Springs—See Springs, Door.

Drawers.....50¢25¢

Drawing Knives—See Knives,
Drawing.

Drills and Drill Stocks—
Blacksmiths' Self-Feeding, each \$7.50, 20¢
Brest, P. S. & W.....40¢10¢
Brest, Wilson's.....30¢25¢
Brest, Millers Falls.....each \$3.00, 25¢
Brest, Bartholomew's.....each \$2.50,
25¢10¢40¢
Ratchet, Merrill's.....20¢20¢25¢
Ratchet, Ingersoll's.....25¢
Ratchet, Parker's.....30¢20¢25¢
Ratchet, Whitney's.....20¢10¢
Ratchet, Weston's.....20¢25¢
Ratchet, Moore's Triple Action.....20¢25¢
Ratchet, Curtis & Curtis.....30¢
Whitney's Hand Drill, Plain, \$11.00,
Adjustable, \$12.00.....30¢10¢
Wilson's Drill Stocks.....\$1.70 @ \$1.85
Twist Drills.....50¢10¢25¢
Standard.....50¢1¢ 25¢
Syracuse (Metal list).....50¢10¢
Cleveland.....50¢10¢
Williams.....50¢10¢10¢
New Process.....50¢10¢25¢
Graham's Pat. Groove Shank 50¢10¢25¢

Drill Bits—See Augers and Bits.

Drill Chucks—See Chucks.

Dripping Pans—See Pans, Dripping.

Drivers, Screw.
Douglas Mfg. Co.....30¢20¢10¢
Dixon's.....60¢
Buck Bros.....30¢
Stanley R. & L. Co.'s
Varnished Handles.....65¢10¢
Black Handles.....60¢10¢
Sargent & Co.'s
No. 1 Forged Blade.....60¢10¢10¢
Nos. 20, 30 and 60.....60¢10¢10¢
P. S. & W.....70¢
Knapp & Cowles:
No. 1.....60¢25¢70¢
No. 2.....60¢10¢10¢70¢25¢
No. 3.....60¢25¢60¢10¢
Nos. 4 and 60, Acme and Ideal, 50¢
Id. 50¢10¢25¢
Stearns'.....25¢10¢25¢
Gay & Parsons.....35¢
Champion.....25¢10¢
Clark's Pat.....30¢35¢
Crawford's Adjustable.....30¢
Ellrich's Socket and Ratchet 25¢25¢10¢
Allard's Spiral, new list.....25¢
Kohl's Common Sense P. dos \$0.00, 25¢10¢
Syracuse Screw-Driver Bits.....80¢30¢25¢
Screw-Driver Bits.....P. dos \$0.25
Fray's Hol. Hdl. Sets, No. 3, \$14.00,
25¢25¢10¢
P. D. & Co.'s All Steel.....50¢
Cincinnati.....25¢10¢
Brace Screw Drivers.....25¢10¢
Buck Bros' Screw-Driver Bits.....

Egg Beaters—See Beaters, Egg.

Egg Pouchers—See Pouchers, Egg.

**Electric Bell Sets—See Bells, Elec-
tric.**

Emery.—No. 4 to No. 54 to Flour, CF
46 gr. 150 gr. P. FF.
Kega, P. D. 40¢ 5¢ 2¢
1/2 kega, P. D. 40¢ 5¢ 2¢
1/4 kega, P. D. 5¢ 2¢ 1¢
10-lb cans, 10 6¢ 5¢
10-lb cans, less
than 10.....10¢ 10¢ 7¢

Enameled and Tinned Ware—
See Ware, Hollow.

**Escutcheons Pins—See Pins, Es-
cutcheon.**

Escutcheons.
Door Lock.....Same dis as Door Locks.
Brass Thread.....60¢60¢10¢
Wood.....25¢

Expanded Metal.
List No. 5.
Lathing.....10¢
Fencing, Painted Sheets.....20¢
Netting, Painted Sheets.....20¢
Door Mats, Galvanized.....25¢
Window Guards, Painted.....15¢
Tree Guards, Painted.....15¢

Extractors, Lemon Juice—See
Squeezers, Lemon.

Fasteners, Blind—
Mackrell's, P. dos \$1.00.....30¢20¢10¢
Van Sand's Screw Pat., \$15 P. gr. 60¢10¢
Van Sand's Old Pat., \$15.00 P. gr. 55¢10¢
Washburn's Old Pattern, P. gr. \$0.10
Merriman's.....New list.
Austin & Eddy No. 2005 P. gr. \$4.00
Security Gravity, P. gr. \$4.00

Faucets—
Fenn's.....40¢
Bohren's Pat. Rubber Ball.....25¢
Fenn's Cork Stops.....35¢4¢
Star.....60¢
Frary's Pat. Petroleum.....40¢25¢
B. & L. Co. Co.
West's Lock, Open and Shut Key.....50¢
Star Metal Plug, new list.....40¢
Lockport Metal Plug, reduced list, 60¢
Metallic Key, Leather Lined.....60¢10¢
Cork Lined.....70¢25¢70¢10¢
Burnside's Red Cedar.....50¢
Burnside's Red Cedar, bbl lots.....50¢10¢
John Sommers'
Peerless Best Block Tin Key.....40¢
LXL, 1st quality, Cork Lined.....50¢
Diamond Lock.....40¢
Perfection, Fine, Red Cedar.....50¢
Goodenough Cedar.....50¢
Ross Metallic Key.....50¢
Reliable Cork Lined.....60¢
Western Pattern Cork Lined.....60¢
Self-Measuring
Enterprise, P. dos \$50.00.....20¢10¢
Lane's, P. Jos \$5.00.....25¢10¢
Victor, P. dos \$56.00.....25¢10¢

Felice Plates—See Plates, Felice.

Fifth Wheels—
Deroy and Cincinnati.....45¢25¢
Brewster.....50¢25¢

Files—
Domestic—
Nicholson Files, Rasps, &c.....60¢10¢60¢10¢25¢
Nicholson (X. F.) Files.....25¢
Nicholson's Royal Files (Seconds).....75¢
(extra prices on certain sizes)
G. & H. Barnett (Black Diamond).....60¢10¢60¢10¢25¢
Eagle.....60¢10¢60¢10¢10¢
Other makers, best brands 60¢10¢60¢10¢
Fair brands.....60¢10¢10¢70¢25¢
Second quality.....70¢10¢75¢10¢
Chelsea Horse Rasps.....50¢7¢50¢10¢
Wheeler's Horse Rasps.....50¢10¢
Chelsea Horse Rasps, Hand Cut.....50¢10¢

Imported—
Moss & Gamble.....List, April 1, 1883, 15¢
Butcher.....Butcher's list, 20¢
Stubbs.....Stubbs list, 25¢30¢
Turton's.....Turton's list, 20¢25¢
Greaves' Horse Rasps, American list, 50¢

Fixtures.
Grindstones—
Sargent's Patent.....70¢10¢
Reading Hardware Co.....80¢10¢
P. S. & W. Co.....50¢10¢

Fluting Machines—See Machines,
Fluting.

Fluting Scissors—See Scissors,
Fluting.

Fodder Squeezers—See Squeezers,
Fodder.

Forks—
Hay, Manure, &c., Asso list, 65¢25¢65¢10¢
Hay, Manure, &c., Phila. list, 60¢20¢25¢
Plated, see Spoons.

Frames—
Saw—
White Vermont.....P. gr \$0.00 @ 10.00
Red, Polished and Varnished.....P. dos
\$1.50, 20¢

Screen, Window and Door—
Porter's Pat. Window and Door Frame.....33¢10¢
Warner's Screen Corner Irons.....35¢4¢
Stearns' Frames and Corners.....35¢25¢10¢
Cortland.....40¢40¢25¢

Freezers, Ice Cream—
White Mountain.....60¢60¢25¢
Granite State.....65¢65¢25¢
Arctic.....70¢70¢25¢
American.....60¢
Buffalo Champion.....65¢65¢25¢
Shepard's Lightning.....65¢65¢25¢
Gem.....60¢
Blizzard.....70¢
Double Action Crown.....60¢
Star.....60¢
Peerless.....60¢10¢
Giant.....60¢
Zero.....60¢10¢10¢
Boss and Pat.....60¢10¢10¢10¢
Keystone, P. D. & Co., each \$1.50.....20¢

Fruit and Jelly Presses—
Presses, Fruit and Jelly,
Fry Pans—See Pans, Fry.

Funnels.
Gerhardt's Perfection, Standard and
Globe, Fin, 1 gro, 10 gr, 2 to 5 gro,
20 x 2 5 gro, 15 x 1 5 to 13
Copper, 1 to 3 dos, 15 x 1 5 to 13
dos, 20 x 1 over 13 dos.....25¢

Furnaces, Soldering.
Burgess No. 3 Gem, tin reservoir.....\$7.00
Burgess No. 3 Gem, copper reservoir, 8.50

Fuse—Dis. 12 1/2¢. \$1000 ft
Common Hemp Fuse, for dry ground, \$2.70
Common Cotton Fuse, for dry ground, 2.55
Single Taped Fuse, for wet ground.....3.35
Double Taped Fuse, for very wet gr. 4.35
Triple Taped Fuse, for very wet gr. 5.50
Small Gutta Percha Fuse, for water, 7.50
Large Gutta Percha Fuse, for water, 12.00

Gates, Molasses—
Stebbin's Pattern.....75¢10¢50¢
Stebbin's Genuine.....60¢10¢10¢
Stebbin's Tinned Ends.....40¢10¢
Chase's Hard Ends.....50¢10¢
Bush's.....70¢70¢10¢
Weed's.....20¢10¢
Boss, P. dos:
No. 1, 47; No. 2, 48; No. 3, 49; No. 4,
50.....60¢10¢10¢

Gauges.
Marking, Mortise, &c.....70¢10¢
Starratt's Surface, Center and Scratch.....25¢10¢
Wire, low list.....10¢10¢
Wire, Wheeler, Madden & Co.....10¢
Wire, Morse's.....25¢
Wire, Brown & Sharpe's.....10¢25¢
Wire, P. S. & W. Co.....10¢10¢

Glimets—
Nail and Spike.....50¢10¢25¢
"Eureka" Glimets.....40¢10¢
"Diamond" Glimets.....P. gr \$5.00
Double Cut, Sheppardson's.....45¢45¢25¢
Double Cut, Ives'.....60¢60¢25¢
Double Cut, Douglass'.....40¢10¢
"Bee," P. gr \$13.....25¢35¢25¢

Glue—
Le Page's Liquid.....35¢35¢25¢
Upton's Liquid.....35¢
Improved Process.....25¢35¢25¢

Glue Pots—See Pots, Glue.

Grease, Axle.
Fraser's.....Keg P. 4¢, Pail P. 5¢
Fraser's, in boxes.....P. gr \$0.50
Dixon's Everlasting, in bxs.....P. dos 1¢
Dixon's Everlasting.....10-lb pails, ea. 35¢
Lower grades, special brands, P. gr \$5.50 @ \$7.00

Grindstones—
Small, at factory.....P. ton \$7.50 @ \$9.00
Family, Cleveland Stone Co.....80¢
Grindstone Fixtures—See Fixtures,
Grindstones.

Hack Saws—See Saws.

Hacks, Axl.
Sawing, Brass Fer, P. gr \$3.50.....45¢10¢
Pat. Sawing, Short, \$1.00 P. dos.....40¢10¢
Pat. Sawing, Long.....P. dos \$1.30
Pat. Peg, Plain Top, P. gr \$10.00.....45¢10¢
Pat. Peg, Leather Top, P. gr \$12.00, 45¢10¢

Halters.
Cover's Rope, Jute.....60¢10¢10¢25¢
Cover's Rope, 7-16 in., Jute.....70¢25¢
Cover's Rope, 1/2 in. Hemp.....50¢25¢
Cover's Adj. Rope Halters.....40¢25¢
Cover's Hemp Horse and Cattle Tie.....50¢
Cover's Jute Horse Ties.....70¢25¢
Cover's Jute Cattle Ties.....70¢10¢25¢
Cover's Adj. Web Halters.....35¢5¢25¢

Hammers—
Handled Hammers—
Maydole's, list Dec. 1, '85.....25¢10¢ 35¢
Buffalo Hammer Co.....30¢50¢10¢
Hudson & Beckley.....30¢50¢10¢
Atha Tool Co.....10¢10¢ @ 1
Verree.....10¢10¢ @ 1
Fayette R. Plumb
"Artisans' Choice," A. E. Nail, 40¢12¢4¢
Regul. "Y. & P." A. E. Nail.....50¢
Horsehoe Turning Hammers.....50¢
Other Hammers.....50¢10¢
Hartford, Nail Hammers.....40¢25¢
Hartford, Machinists, &c.....50¢25¢50¢10¢
Magnetic Tack, Nos. 1, 2, 3, \$1.25, 1.50,
1.75.....30¢10¢
Nelson Tool Works.....40¢10¢
Warner & Nobles.....30¢25¢
Peck, Stow & Wilcox.....40¢
Sargent's.....35¢45¢10¢

Heavy Hammers and Sledges—
3 lb and under.....P. \$40¢
3 to 5.....P. \$30¢ (70¢70¢10¢)
Over 5.....10¢4¢11¢
Wilkinson's Smith.....10¢4¢11¢

Handcuffs and Leg Irons—See
Police Goods.

Handles—
Cross-Cut Saw Handles—
Atkins' No. 1 Loop, P. pair, 25¢; No. 3
13¢; No. 6, 10¢; No. 3 and No. 4
Reversible, 18¢.
Boynton's Loop Saw Handles, 50¢.....60¢
Champion.....15¢

Iron, Wrought or Cast—
Door or Thumb.
Nos. 0 1 2 3 4
Per dos.....\$0.90 1.00 1.10 1.35 1.50
40ggins' Latches.....P. dos 30¢35¢
Bronze Iron Drop Latches.....P. dos 70¢ net
Plate, \$1.10; no Plate, \$0.85.....net
Jarn Door, P. dos \$1.40.....10¢10¢
Best and Lifting.....70¢

Wood—
Saw and Plane.....40¢10¢40¢10¢25¢
Hammer, Hatchet, Axe, Sledge, &c.....40¢
Bickory Firmer Chisel, ass'd, P. gr 4.50 P.
Hickory Firmer Chisel, large, P. gr 5.00 P.
Apple Firmer Chisel, ass'd, P. gr 5.00 P.
Apple Firmer Chisel, large, P. gr 5.00 P.
Socket Firmer Chisel, ass'd, P. gr 5.00 P.
Socket Framing Chisel, ass'd, P. gr 5.00 P.
I. S. Smith & Co.'s Pat File.....60¢
File, assorted.....P. gr 75¢
Auger, assorted.....P. gr 5.00.....60¢
Auger, large.....P. gr 7.00.....60¢
Pat. Auger, Ives'.....30¢10¢
Pat. Auger, Douglass.....P. \$1.25
Pat. Auger, Swan's.....P. \$1.00
Hoe, Rake, Shovel, &c.....60¢1¢

Hangers—

Barn Door, old patterns, 50¢10¢10¢70¢
 Barn Door, New England, 50¢10¢10¢70¢
 Barn Door, Anti-Friction, 50¢10¢10¢70¢
 Orleans Steel, 50¢10¢10¢70¢
 Hamilton Wrought Wood Track, 50¢10¢10¢70¢
 U. S. Wood Track, 50¢10¢10¢70¢
 Champion, 50¢10¢10¢70¢
 Rider and Wooster, Medina Mfg. Co.'s, 50¢10¢10¢70¢
 Climax Anti-Friction, 50¢10¢10¢70¢
 Climax Anti-Friction for Wood Track, 50¢10¢10¢70¢
 Zenith for Wood Track, 50¢10¢10¢70¢
 Reed's Steel Arm, 50¢10¢10¢70¢
 Challenge, Barn Door, 50¢10¢10¢70¢
 Sterling, 50¢10¢10¢70¢
 Victor, No. 1, \$15.00; No. 2, \$16.50; No. 3, \$18.00.
 Cheritres, 50¢10¢10¢70¢
 Kidder's, 50¢10¢10¢70¢
 Boss, 50¢10¢10¢70¢
 Best Anti-Friction, 50¢10¢10¢70¢
 Duplex (Wood Track), 50¢10¢10¢70¢
 Terry's Pat., 50¢10¢10¢70¢
 Terry's Steel Anti-Friction Leader, 50¢10¢10¢70¢
 Terry's Steel Anti-Friction Ideal, 50¢10¢10¢70¢
 Cronk's Patent, Steel Covered, 50¢10¢10¢70¢
 Wood Track Iron Clad, 50¢10¢10¢70¢

Carrier Steel Anti-Friction, 50¢10¢10¢70¢
 Architect, 50¢10¢10¢70¢
 Ellipse, 50¢10¢10¢70¢
 Felix, 50¢10¢10¢70¢
 Richards, 50¢10¢10¢70¢
 Lane's Standard, 50¢10¢10¢70¢
 Lane's New Standard, 50¢10¢10¢70¢
 Lane's Parlor, 50¢10¢10¢70¢
 Warner's Pat., 50¢10¢10¢70¢
 Stearns' Anti-Friction, 50¢10¢10¢70¢
 Stearns' Challenge, 50¢10¢10¢70¢
 Faultless, 50¢10¢10¢70¢
 American, 50¢10¢10¢70¢
 Rider & Wooster, No. 1, 62¢; No. 2, 75¢.
 Paragon, Nos. 1, 2 and 3, 50¢10¢10¢70¢
 Cincinnati, 50¢10¢10¢70¢
 Paragon, Nos. 5, 6, 7 and 8, 50¢10¢10¢70¢
 Crescent, 50¢10¢10¢70¢
 Nickel Cast Iron, 50¢10¢10¢70¢
 Nickel, Malleable Iron and Steel, 50¢10¢10¢70¢
 Scranton Anti-Friction Single Strap, 50¢10¢10¢70¢
 Wild West, 4 in. Wheel, \$15.00; 5 in. Wheel, \$18.00.
 Star, 50¢10¢10¢70¢
 May, 50¢10¢10¢70¢
 Barry, 50¢10¢10¢70¢
 Interstate, 50¢10¢10¢70¢
 Magic, 50¢10¢10¢70¢

Harness Snaps—See Snaps.

Hatchets—
 American Axe and Tool Co., 50¢10¢10¢70¢
 Blood's, 50¢10¢10¢70¢
 Hunt's, 50¢10¢10¢70¢
 Hurd's, 50¢10¢10¢70¢
 Mann's, 50¢10¢10¢70¢
 Peck's, 50¢10¢10¢70¢
 Underhill's, 50¢10¢10¢70¢
 Buffalo Hammer Co., 50¢10¢10¢70¢
 Fayette R. Plumb, 50¢10¢10¢70¢
 C. Hammond & Son, 50¢10¢10¢70¢
 Kelly's, 50¢10¢10¢70¢
 Sargent & Co., 50¢10¢10¢70¢
 P. & W. Co., 50¢10¢10¢70¢
 Ten Eyck Edge Tool Co., 50¢10¢10¢70¢
 Collins, 50¢10¢10¢70¢
 Schulte, Lohoff & Co., 50¢10¢10¢70¢

Hay and Straw Knives—See Knives.**Hinges—****Blind Hinges—**

Parker, 50¢10¢10¢70¢
 Palmer, 50¢10¢10¢70¢
 Seymour, 50¢10¢10¢70¢
 Butler, 50¢10¢10¢70¢
 Clark's, Nos. 1, 2, 3, 4 and 5, 50¢10¢10¢70¢
 Clark's Morris Gravity, 50¢10¢10¢70¢
 Sargent's Nos. 1, 2, 3, 4, 5, 11, 12, 50¢10¢10¢70¢
 Sargent's, No. 12, 50¢10¢10¢70¢
 Reading's Gravity, 50¢10¢10¢70¢
 Shepard's, 50¢10¢10¢70¢
 Noiseless, 50¢10¢10¢70¢
 Niagara, 50¢10¢10¢70¢
 Buffalo, 50¢10¢10¢70¢
 Clark's Genuine Pattern, 50¢10¢10¢70¢
 O. S. Lull & Porter, 50¢10¢10¢70¢
 Acme, Lull & Porter, 50¢10¢10¢70¢
 Queen City Reversible, 50¢10¢10¢70¢
 Clark's Lull & Porter, Nos. 0, 1, 1 1/2, 2, 2 1/2, 3, 50¢10¢10¢70¢
 North's Automatic Blind Fixtures, 50¢10¢10¢70¢
 1, for Wood, \$9.00; No. 3, for Brick, \$11.50.
Gate Hinges—
 Western, 50¢10¢10¢70¢
 Geer's Spring and Blank Butts, 50¢10¢10¢70¢
 Union Spring Hinge Co.'s list, March 1891, 50¢10¢10¢70¢
 Acme, 50¢10¢10¢70¢
 Empire and Crown, 50¢10¢10¢70¢
 Hero and Monarch, 50¢10¢10¢70¢
 American, Gem, and Star, 50¢10¢10¢70¢
 Oxford, 50¢10¢10¢70¢
 Barker's Double Acting, 50¢10¢10¢70¢
 Union Mfg. Co., 50¢10¢10¢70¢
 Bommer's, 50¢10¢10¢70¢
 Buckman's, 50¢10¢10¢70¢
 Chicago, 50¢10¢10¢70¢
 Wiles, 50¢10¢10¢70¢
 Devore's, 50¢10¢10¢70¢
 Rex, 50¢10¢10¢70¢
 Royal, 50¢10¢10¢70¢
 Reliable, 50¢10¢10¢70¢
 Champion, 50¢10¢10¢70¢
 Bardley's Patent, 50¢10¢10¢70¢
 Stearns, 50¢10¢10¢70¢
 Niagara, Holdback pattern, per gross, \$14.00

Wrought Iron Hinges

1st February 14, 1891.
 Strap and T., 50¢10¢10¢70¢

Corrugated Strap and T., 50¢10¢10¢70¢

Screw Hook and Strap, 50¢10¢10¢70¢
 Strap, 50¢10¢10¢70¢
 Screw Hook and Eye, 50¢10¢10¢70¢
 Rolled Blind Hinges, Nos. 22 and 24, 50¢10¢10¢70¢
 Rolled Blind Hinges, Nos. 222 and 234, 50¢10¢10¢70¢
 Rolled Plate, 50¢10¢10¢70¢
 Rolled Raised, 50¢10¢10¢70¢
 Plate Hinges (8, 10 & 12 in., 50¢10¢10¢70¢
 "Providence" over 12 in., 50¢10¢10¢70¢

Hoes—

Eye—
 D. & H. Scovill, 50¢10¢10¢70¢
 Lane's Crescent Planter Pattern, 50¢10¢10¢70¢
 Lane's Razor Blade, Scovill Pattern, 50¢10¢10¢70¢
 Maynard, S. & O. Pat., 50¢10¢10¢70¢
 Sandusky Tool Co., S. & O. Pat., 50¢10¢10¢70¢
 Am. Axe and Tool Co., S. & O. Pat., 50¢10¢10¢70¢
 Chittanooga Tool Co., S. & O. Pat., 50¢10¢10¢70¢
 Grab, 50¢10¢10¢70¢
Handled—
 Garden, Mortar, &c., 50¢10¢10¢70¢
 Planter's, Cotton &c., 50¢10¢10¢70¢
 Warren Hoe, 50¢10¢10¢70¢
 Magic, 50¢10¢10¢70¢

Hog Rings and Rings—See Rings and Rings.**Helisting Apparatus—See Machines, Helisting.****Hollow-Ware—See Ware, Hollow.****Holders.**

Sprenkle's Pat., 50¢10¢10¢70¢
Bit.
 Extension, 50¢10¢10¢70¢
 Barber's, 50¢10¢10¢70¢
 Ives, 50¢10¢10¢70¢
 Diagonal, 50¢10¢10¢70¢
 Angular, 50¢10¢10¢70¢
File and Tool—
 Bait Pat., 50¢10¢10¢70¢
 Nicholson File Holders, 50¢10¢10¢70¢
 Dick's Tool Holder, 50¢10¢10¢70¢

Hooks—

Cast Iron—
 Bird Cage, Sargent's list, 50¢10¢10¢70¢
 Bird Cage, Reading, 50¢10¢10¢70¢
 Clothes Line, Sargent's list, 50¢10¢10¢70¢
 Clothes Line, Reading list, 50¢10¢10¢70¢
 Ceiling Sargent's list, 50¢10¢10¢70¢
 Harness, Reading list, 50¢10¢10¢70¢
 Coat and Hat, Sargent's list, 50¢10¢10¢70¢
 Coat and Hat, Reading, 50¢10¢10¢70¢
Wrought Iron—
 Cotton, 50¢10¢10¢70¢
 Cotton Pat. (N.Y. Mailer & Handle Wks.), 50¢10¢10¢70¢
 Tassel and Picture (T. & S. Mfg. Co.), 50¢10¢10¢70¢
 Wrought Staples, Hooks, &c., 50¢10¢10¢70¢
 See Wrought Goods.

Wire—

Wire Coat and Hat, Gem, list April, 1886, 50¢10¢10¢70¢
 Wire Coat and Hat, Miles, list April, 1886, 50¢10¢10¢70¢
 Indestructible Coat and Hat, 50¢10¢10¢70¢
 Wire Coat and Hat, Standard, 50¢10¢10¢70¢
 Shutter, Hat and Coat, 50¢10¢10¢70¢
 Steady Ceiling Hooks, 50¢10¢10¢70¢
 Belt, 50¢10¢10¢70¢
 Atlas Coat and Hat, 50¢10¢10¢70¢
 Bright Wire Goods, see Wire.

Miscellaneous.

Grahn's No. 2, \$2.00; No. 3, \$2.25; No. 4, \$2.50.
 Noll's Grass, 50¢10¢10¢70¢
 Bush, 50¢10¢10¢70¢
 Whitetree-Patent, 50¢10¢10¢70¢
 Hooks and Eyes—Malleable Iron, 50¢10¢10¢70¢
 Hooks and Eyes—Brass, 50¢10¢10¢70¢
 Fish Hooks, American, 50¢10¢10¢70¢
 Bench Hooks, 50¢10¢10¢70¢

Horse Nails—See Nails, Horse.**Horse Shoes—See Shoes, Horse.****Hose, Rubber—**

Competition, 50¢10¢10¢70¢
 Standard, 50¢10¢10¢70¢
 Extra, 50¢10¢10¢70¢
 N. Y. B. & P. Co., Para., 50¢10¢10¢70¢
 N. Y. B. & P. Co., Extra, 50¢10¢10¢70¢
 N. Y. B. & P. Co., Dundee, 50¢10¢10¢70¢

Huskers—

Blair's Adjustable, 50¢10¢10¢70¢
 Blair's Adjustable Clipper, 50¢10¢10¢70¢
 Hubbard's Solid Steel, 50¢10¢10¢70¢

Indurated Fiber-Ware—See Ware, Indurated Fiber.**Irons.**

Sad—
 From 4 to 10, at factory, 50¢10¢10¢70¢
 Self-Heating, 50¢10¢10¢70¢
 Self-Heating, Tailors', 50¢10¢10¢70¢
 Mrs. Pott's Irons, 50¢10¢10¢70¢
 Enterprise Star Irons, 50¢10¢10¢70¢
 X Cold Handle Sad Iron, 50¢10¢10¢70¢
 Ideal Irons new list, 50¢10¢10¢70¢
 Salamander, Irons, 50¢10¢10¢70¢
 B. B. Sad Irons, 50¢10¢10¢70¢
 Combined Fluter and Sad Iron, 50¢10¢10¢70¢
 Fox Reversible, Self-Fluter, 50¢10¢10¢70¢
 Chinese Laundry (N.Y. Butt Co.), 50¢10¢10¢70¢
 New England, 50¢10¢10¢70¢
 Mahony's Troy Pol. Irons, 50¢10¢10¢70¢
 Sensible, list Jan. 91, 50¢10¢10¢70¢
 Sensible Tailor's Irons, 50¢10¢10¢70¢
 National Self-Heating, 50¢10¢10¢70¢
Soldering—
 Soldering Coppers, 50¢10¢10¢70¢
 Covert's Adjustable, list Jan. 1 1886, 50¢10¢10¢70¢
Irons, Pinking, per dos., 50¢10¢10¢70¢

Jack Screws—See Screws.**Jack, Wagon.**

Daly, 50¢10¢10¢70¢
 Victor, 50¢10¢10¢70¢
 Lockport, 50¢10¢10¢70¢

Kettles—

Brass, Spun, Plain, list Jan. 1, '91, 25¢53¢
 Brass, Spun, Pld. W.M. list Jan. 1, '91, 20¢
 Enamelled and Tea—See Hollow Ware.

Keys—

Lock Ass'n list Dec. 30, 1886, 50¢10¢10¢70¢
 Eagle, Cabinet, 50¢10¢10¢70¢
 Hotchkiss' Brass Blanks, 50¢10¢10¢70¢
 Hotchkiss, Copper and Tinned, 50¢10¢10¢70¢
 Hotchkiss' Pad, and Cab., 50¢10¢10¢70¢
 Hatcher Bed Keys, 50¢10¢10¢70¢
 Wollensak Tinned, 50¢10¢10¢70¢

Knife Sharpeners—See Sharpeners, Knife.**Knives.**

Butcher, Shoe, &c.—
 Wilson's Butcher Knives, list Dec. 8, 1890, 50¢10¢10¢70¢
 Ames' Butcher Knives, 50¢10¢10¢70¢
 Foster Bros' Butcher, &c., 50¢10¢10¢70¢
 Jordan's AAAI, Butchers', list, 50¢10¢10¢70¢
 Nichols' Butcher Knives, 50¢10¢10¢70¢
 W. W. Wilson, Butcher, 6 in., \$2.00; 7 in., \$2.75; 8 in., \$3.50, &c.
 Ames' Shoe Knives, 50¢10¢10¢70¢
 Ames' Bread Knives, 50¢10¢10¢70¢
 Moran's Shoe and Bread, 50¢10¢10¢70¢
 Hay and Straw, 50¢10¢10¢70¢
 Table and Pocket, 50¢10¢10¢70¢
 Corn, Auburn Mfg. Co. Western Pat., 50¢10¢10¢70¢
Corn—
 Bradleys', 50¢10¢10¢70¢
 Wadsworth's, 50¢10¢10¢70¢
Drawing—
 Witherby, 50¢10¢10¢70¢
 P. S. & W., 50¢10¢10¢70¢
 New Haven, 50¢10¢10¢70¢
 Merrill, 50¢10¢10¢70¢
 Douglas, 50¢10¢10¢70¢
 Watrous, 50¢10¢10¢70¢
 L. & J. White, 50¢10¢10¢70¢
 Bradley's, 50¢10¢10¢70¢
 Wadsworth's, 50¢10¢10¢70¢
 Wilkinson's Folding, 50¢10¢10¢70¢
Hay and Straw—
 Lightning, from jobbers, 50¢10¢10¢70¢
 Wadsworth's, 50¢10¢10¢70¢
 Carter's Needle, 50¢10¢10¢70¢
 Heath's, 50¢10¢10¢70¢
 Auburn Hay, Corn, and Spear Point, 50¢10¢10¢70¢
 Auburn, Straw, 50¢10¢10¢70¢
 Noll's Hay, 50¢10¢10¢70¢
Mining.
 Am. (3d quality), 50¢10¢10¢70¢
 2 blades, 12 1/2 blades, \$18, 50¢10¢10¢70¢
 Lothrop's, 50¢10¢10¢70¢
 Smith's, 50¢10¢10¢70¢
 Knapp & Cowles, 50¢10¢10¢70¢
 Buffalo Adjustable, 50¢10¢10¢70¢
 Buffalo Double Adjustable, 50¢10¢10¢70¢

Knobs—

Door Mineral, 50¢10¢10¢70¢
 Door Por. Jap'd, 50¢10¢10¢70¢
 Door Por. Plated, Nickel, 50¢10¢10¢70¢
 Drawer, Porcelain, 50¢10¢10¢70¢
 Hemacite Door Knobs, 50¢10¢10¢70¢
 Yale & Towne Wood, list Dec. 1885, 50¢10¢10¢70¢
 Furniture, Plain, 70¢ gro 10¢, 10¢
 Furniture, Wood Screws, 50¢10¢10¢70¢
 Bed, But. Tip, 50¢10¢10¢70¢
 Picture, Judd's, 50¢10¢10¢70¢
 Picture, Hemacite, 50¢10¢10¢70¢
 Shutter, Porcelain, 50¢10¢10¢70¢
 Carriage, Jap., 50¢10¢10¢70¢
 Bardley's Wood Door, Shutter, &c., 50¢10¢10¢70¢

Ladies—

Melting, Sargent's, 50¢10¢10¢70¢
 Melting, Reading, 50¢10¢10¢70¢
 Melting, Monroe's Pat., 50¢10¢10¢70¢
 Melting, P. S. & W., 50¢10¢10¢70¢
 Melting, Warner's, 50¢10¢10¢70¢

Lanterns—

Plain with Guards, 50¢10¢10¢70¢
 Lift Wire, with Guards, 50¢10¢10¢70¢
 Square Plain, with Guards, 50¢10¢10¢70¢
 Sq. Lift Wire, with Guards, 50¢10¢10¢70¢

Police Lanterns (including packages).

2 1/2-inch Bull's-eye Police regular, 50¢10¢10¢70¢
 3-inch Bull's-eye Police regular, 50¢10¢10¢70¢
 2 1/2-inch Bull's-eye Police flash light, 50¢10¢10¢70¢
 3-inch Bull's-eye Police flash light, 50¢10¢10¢70¢

Lawn Mowers—See Mowers, Lawn.**Leaders, Cattle.**

Humason, Beckley & Co.'s, 50¢10¢10¢70¢
 Sargent's, 50¢10¢10¢70¢
 Hotchkiss, 50¢10¢10¢70¢
 Peck, Stow & W. Co., 50¢10¢10¢70¢

Lemon Squeezers—See Squeezers, Lemon.**Lifters, Transom.**

Wollensak's:
 Class 3 and 4, Bronzed Iron, 50¢10¢10¢70¢
 Class 3 and 4, Bronze Metal, 50¢10¢10¢70¢
 Class 3 and 4, Bronze, 50¢10¢10¢70¢
 Skylight Lifters, 50¢10¢10¢70¢
 Crown, Eagle and Shield, 50¢10¢10¢70¢
 Reiter's, list Feb. 20, 1891, 50¢10¢10¢70¢
 Bronzed Iron Rods, 50¢10¢10¢70¢
 Brass, Real Bronze or Nickel Plate, 50¢10¢10¢70¢
 Excelsior, 50¢10¢10¢70¢
 Shaw's, 50¢10¢10¢70¢
 Payson's:
 Universal, 50¢10¢10¢70¢
 Solid Grip, 50¢10¢10¢70¢
 Imperial, 50¢10¢10¢70¢

Lines—

Cotton and Linen Fish, Draper's, 50¢10¢10¢70¢
 Draper's and Tate's Chalk, 50¢10¢10¢70¢
 Draper's Mason's Line, 50¢10¢10¢70¢
 1 1/2 in., No. 2, \$1.75; No. 3, \$2.25; No. 4, \$2.75; No. 5, \$3.25.
 Cotton Chalk, 50¢10¢10¢70¢
 Samsor Cotton, No. 4, \$2; No. 4 1/2, \$2.50.
 Silver Lake, Braided, No. 0, \$0.00; No. 1, \$0.50; No. 2, \$7.00; No. 3, \$7.50; No. 4, \$8.00; No. 4 1/2, \$8.50.

Mason's Colored Cotton.

Wire Clothes, No. 12, 18, 20, 50¢10¢10¢70¢
 100 ft., \$4.00 \$3.50 \$3.00
 Ventilator Cord, Samsor Braided, 50¢10¢10¢70¢
 White or Drab Cotton, 50¢10¢10¢70¢

Links, Open.

Terry's—per gro.
 Nos. 1 2 3 4
 50¢10¢10¢70¢ 8.00 12.00 16.00

Locks, &c.—**Cabinet—**

Eagle, Gaylord Par- Jan. 1, '84, rev. 50¢10¢10¢70¢
 ker and Corbin Jan. 1, '85, 50¢10¢10¢70¢
 Deits, Nos. 36 to 39, 50¢10¢10¢70¢
 Deits, Nos. 51 to 53, 50¢10¢10¢70¢
 Deits, Nos. 56 to 58, 50¢10¢10¢70¢
 Stoddard Lock Co., 50¢10¢10¢70¢
 "Champion" Night Latches, 50¢10¢10¢70¢
 Barnes Mfg. Co., 50¢10¢10¢70¢
 Eagle and Corbin Trunk, 50¢10¢10¢70¢
 "Champion" Cab. and Combin., 50¢10¢10¢70¢
 Yale, 50¢10¢10¢70¢
 Roman's, 50¢10¢10¢70¢
 R. & E. Mfg. Co., list Mar. 30, 1889, 50¢10¢10¢70¢
 Mallory, Wheeler & Co., list July, '88, 50¢10¢10¢70¢
 Sargent & Co., list Aug. 1, '88, 50¢10¢10¢70¢
 Reading Hardware Co., list Feb. 2, '88, 50¢10¢10¢70¢
 Brittan, Graham & Mathes, list Jan. 1890, 50¢10¢10¢70¢
 Perkins' Burglar Proof, 50¢10¢10¢70¢
 Plate, 50¢10¢10¢70¢
 Barnes Mfg. Co., 50¢10¢10¢70¢
 Yale, 50¢10¢10¢70¢
 Deits Flat Key, 50¢10¢10¢70¢
 L. & C. Round Key Latches, 50¢10¢10¢70¢
 L. & C. Flat Key Latches, 50¢10¢10¢70¢
 Roman's Night Latches, 50¢10¢10¢70¢
 Brooklyn Latches, 50¢10¢10¢70¢
 Sheparson or U. S., 50¢10¢10¢70¢
 Seed's N. Y. Hap Lock, 50¢10¢10¢70¢

Padlocks.

List June 10, 1891, 50¢10¢10¢70¢
 Norwich Lock Mfg. Co., old list, 70¢10¢10¢70¢
 Yale Lock Mfg. Co.'s, 50¢10¢10¢70¢
 Eagle, 50¢10¢10¢70¢
 Eureka, Eagle Lock Co., 50¢10¢10¢70¢
 Roman's, Nos. 0 to 91, 50¢10¢10¢70¢
 Roman's Scandinavian, &c., Nos. 100 to 105, 50¢10¢10¢70¢
 A. E. Deits, 50¢10¢10¢70¢
 Champion Padlocks, 50¢10¢10¢70¢
 Hotchkiss, 50¢10¢10¢70¢
 Star, 50¢10¢10¢70¢
 Horseshoe, 50¢10¢10¢70¢
 Barnes Mfg. Co., 50¢10¢10¢70¢
 Noll's, 50¢10¢10¢70¢
 Brown's Pat., 50¢10¢10¢70¢
 Scandinavian, 50¢10¢10¢70¢
 E. T. Fraim's Keystone Scandinavian, 50¢10¢10¢70¢
 Nos. 110, 120, 130 and 140, 50¢10¢10¢70¢
 Other Nos., 50¢10¢10¢70¢
 Ames Sword Co., up to No. 150, 50¢10¢10¢70¢
 Ames Sword Co., above No. 150, 50¢10¢10¢70¢
 Slaymaker Barry & Co., 50¢10¢10¢70¢
 No. 1010 line, 50¢10¢10¢70¢
 No. 41 line, 50¢10¢10¢70¢
 No. 61 line, 50¢10¢10¢70¢
 No. 21 line, 50¢10¢10¢70¢
 Sash, &c.

Clark's, No. 1, \$10; No. 2, \$8; No. 3, \$6.

Ferguson's, 50¢10¢10¢70¢
 Victor, 50¢10¢10¢70¢
 Walker's, 50¢10¢10¢70¢
 Attwell Mfg. Co., 50¢10¢10¢70¢
 Reading, 50¢10¢10¢70¢
 Hammond's Window Springs, 50¢10¢10¢70¢
 Common Sense, Jap'd, Cop'd and Braided, 50¢10¢10¢70¢
 Common Sense, Nickel Plated, 50¢10¢1

Walleys. Hickory..... 20x10@20x10x10 Lignum vitae..... 20x10@20x10x10 R. & L. Block Co., Hickory & L. V. 20x10@20x10x10	Padlocks. —See Locks.	Pliers and Nippers. Butter's Patent..... 50x50x10 Hall's No. 2, 5 in., \$18.50; No. 4, 7 in. \$21.00; No. 6, 9 in., 30x10x35x55 Humason & Beckley Mfg. Co., 50x50x10x10 Lindsay's Giant..... 40x40x10 Gas Pliers, Castor's Nickel Plated..... 60x55 Eureka Pliers and Nippers..... 40x40 Russell's Parallel..... 25x25 P. S. & W. Cast Steel..... 50x50 P. S. & W. Finners' Cutting Nippers..... 50x50	B. D. for N. E. Hangers. Small. Med. Large. Per 100 feet..... \$3.15 \$3.70 \$3.95 Terry's Steel Rail, 3 foot..... 50x50 Victor Track Rail, 7 1/2 foot..... 50x50 Carrier Steel Rail, 7 foot..... 50x50 Moore's Wrought Iron..... 25x25
Measures. Standard Fiberware, No. 1, peck, # dozen, \$4; 1/2 peck, \$3.50. Meat Cutters. —See Cutters, Meat. Menders, Harness. Per doz..... \$2.00 Mills. Coffee— Box and Side, List Jan. 1, 1888..... 60x25 American, Enterprise Mfg Co. 20x10x30x5 The Swift, Lane Bros..... 20x10x30x5 Mining Knives. —See Knives, Mining. Molasses Gates. —See Gates, Molasses. Money Drawers. —See Drawers, Money. Mowers, Lawn. Pennsylvania New Model, Excelsior, Continental, &c..... 60x60x55 Philadelph. 60x10x10 Perfection..... 60x10x10 Easy..... 60x10x10 Bay State..... 60x10x10 Other Machines..... 60x10x10	Pails. Galvanized Iron. Quarts 10 12 14 Hill's Light Weight, # doz. \$2.75 3.00 3.25 Hill's Heavy Weight, # doz. 3.00 3.25 3.75 Helwig's..... 2.50 2.75 3.00 Sidney Shepard & Co..... 2.25 2.50 3.00 Iron Clad..... 2.50 2.75 3.00 Fire Buckets..... 2.75 3.25 3.50 Buckets, see Well Buckets. Indurated Fibre Ware. —25x Star Pails, 12 qt. # doz \$5.40 Stable and Milk, 14 qt. # doz 6.00 "Ice Pa la. deep. 14 qt. # doz \$5.40 "round bottom. # doz \$5.30 Standard Fibre Ware. Plain. Dec'd Water Pails, 12 qt., per doz. \$4.00 \$4.50 Dairy Pails, 14 qt., per doz. 4.50 5.00 Fire Pails, No. 1, 12 qt., per doz. 4.50 5.00 Fire Pails, No. 3, 14 qt., per doz. 5.00 5.50 Sugar Pails..... 6.00 6.50 Horse Pails..... 5.00 Buggy Pails..... 4.00 Slop Jars (bal. trap)..... 9.00 9.00 Chamber Pails, 14-qt..... 6.50 7.50 Pans. Dripping. Small sizes..... # 6 1/2 Large sizes..... # 6 1/2 Silver & Co. (Covered)..... 40x	Plumbers and Levels. Regular List..... 70x10x70x10x10 Disston's..... 50x Pocket Levels..... 70x10x70x10x10 Davis Iron Levels..... 30x Davis' Inclinometers..... 10x10 Ponchers. Buffalo Steam Egg Poachers, # doz, No. 1, \$6.00; No. 2, \$5.00..... 25x Silver & Co., 6-Ring, # doz \$4; 3-Ring \$2 Pokes, Animal. Bishop's I. A. L..... # doz \$6.00 Bishop's O. K..... # doz \$5.25 Bishop's Pioneer..... # doz \$3.75 Bishop's American..... # doz \$2.75 Eagle, Double Stale..... # doz \$3.75 Eagle, Single Stale..... # doz \$3.75 Buckeye, Single Stale..... # doz \$3.75 Police Goods. R. I. Tool Co., Handcuffs, \$15.00; # doz 10x10 Tool Co., Leg Irons, \$25.00; # doz 10x10 Towers..... 30x Daley's Improved Handcuffs, 3 Hands, Polished, # doz \$48.00; Nickle, \$57.00; 3 Hands, Polished, # doz \$72.00; Nickle, \$84.00..... 25x J. F. Lovell's Police Goods..... 25x Prestoline, Metal. Prestoline..... 30x Prestoline Paste..... 33x Gaston's Silver Compound..... 33x Polish, Steve. Joseph Dixon's..... # gro \$6.00, 10x Gem..... # gro \$4.50, 10x Gold Medal..... # gro \$6.00, 25x Lustr..... # gro \$6.00, 25x Lustr..... # gro \$4.75 Rising Sun, 5 gro lots..... # gro \$5.50 Dixon's Plumbago..... # 8x Boynton's Noon Day, # gro..... 13.00 Parlor Stove Enamel, # gro..... 10.00 Yates' Liquid, 3 3 3 10 gal..... # gal \$0.70, \$0.50, \$0.50 Yates Standard Paste Polish, 10-b cans, # 12x6 Jet Black..... # 12x6 Japanese..... # gro \$3.50 Prestoline..... # gro \$3.50 Diamond..... # gro \$12.00 Bonnell's Liquid Stove Polish, # gro \$9.00 Bonnell's Paste Stove Polish, # gro \$6.00 Black Eagle Benzine Paste, 5 and 10 b cans..... 12x6 Black Jack Water Paste, 5 and 10 b cans..... 12x6 Nickle Paste..... # gro \$6.00 Crown Paste..... # gro \$7.20 Crown Paste, in 5 and 10 b pails..... # 12x6 Black Flag..... # gro \$7.20 Black Flag, 5 and 10 b pails..... # 12x6 Black Flag, liquid, in bottles, # gro \$8.40 Poppers, Corn. Henis or Scarer, 1 qt. # gro \$10.00; 10.50 Round or Square, 1 qt. # gro \$15.00; 15.50 Round or Square, 2 qt. # gro \$18.50; 19.00 Post Hole and Tree Augers and Diggers. —See Diggers, Post Hole, &c. Potato Parers. —See Parers, Potato. Pots. Tinned..... 4x10x40x10x5 Enamelled..... 40x10x40x10x5 Family, Howe's "Eureka"..... 40x Family, L. F. C.'s "Handy"..... 50x Presses. Fruit and Jelly. Enterprise Mfg. Co..... 30x10x30x5 Henis..... # doz \$3.50 Shepard's Queen City..... 40x Silver & Co..... # doz \$2.75 Pruning Hooks and Shears. —See Shears. Pullers. Nail..... # doz \$18.00, 33x Curtis Hammer..... # doz \$9.00 Tack, No. 1..... # doz \$13.00, 10x Tack, No. 2..... # doz \$15.00, 10x Pellcan..... # doz \$9.00, 25x Eclipse..... each, \$2.00 net Pulleys. Hot House, Awning, &c..... 60x10x10 Japanned Screw..... 60x10x10 Brass Screw..... 60x10x10 Japanned Slide..... 60x10x10 Japanned Clothes Line..... 60x10x10 Empire Sash Pulley..... 50x60x50 Moore's Sash, Anti-Friction..... 50x Hay Fork, Solid Eye, \$4.00; Swivel, \$4.50..... 50x10x50x10x50 Hay Fork, "Anti-Friction," 5 in. Solid, \$5.70..... 50x Hay Fork, "P" Common and Pat. Bushed..... 20x Hay Fork, Tarbox Pat. Iron..... 20x Hay Fork, Reed's Self-Lubricating..... 60x Shade Blocks..... 45x Tackle Blocks..... 45x Moore's Anti-Friction 6 in. Wheel, # doz \$12.00..... 40x Pumps. Cistern, Best Makers..... 60x60x10 Pitcher Spout, Best Makers..... 67x Pitcher Spout, Cheaper G'ds. 75x10x10 Punches. Saddlers' or Drive, good, # doz..... 60x60 Bemis & Call Co.'s Cast Steel Drive, 50x50 Bemis & Call Co.'s Springfield Socket, 50x50 Spring, good quality..... # doz \$2.50; 2.00 Spring, Leach's Pat..... 15x Bemis & Call Co.'s Spring and Check..... 40x Solid Timmers' P.S. & W. Co., # doz \$1.44, 55x Timmer's P.S. & W. Co., # doz \$1.44, 55x Rice Hand..... 15x Avery's Revolving..... 40x Avery's Saw-Set and Punch, See Saw Set Rail. Sliding Door, Wrt Brass, # 35x..... 15x Sliding Door, Bronzed Wrt Iron, # ft. 7x Sliding Door, Iron, Painted, # foot 4x, 40x Barn Door, Light Iron..... 3x Per 100 feet..... \$3.00 2.50 3.70, 10x	Razors. J. R. Torrey Razor Co..... 20x Wostenholme and Butcher, \$10.00 to \$1.00 Jordan's AAAI, new list..... net Jordan's AAAI, low list..... net Galvanic..... # doz \$15.00 Razor Straps. —See Straps, Razor. Rings and Ringers. Bull Rings Union Nut Co..... 55x Sargent's..... 60x10x70x55 Hotchkiss' low list..... 30x Humason, Beckley & Co.'s..... 70x10x10 Peck, Stow & W. Co.'s..... 50x10x50x10x10 Elrich Hdw. Co., White Metal, low list..... 50x50x10x10 Rings. Top of the Hill Ringers..... # doz \$3.00 Top of the Hill Ringers..... # doz \$1.25 Hill's Improved Ringers..... # doz \$1.25 Hill's Old Style Ringers..... # doz \$1.25 Hill's Tongs..... # doz \$3.00 Hill's Ringers..... # doz \$1.00 Perfect Ringers..... # doz \$1.50 Perfect Ringers..... # doz \$2.25 Blair's Hog Ringers..... # doz \$2.00 Blair's Hog Ringers..... # doz \$4.00 Champion Ringers..... # doz \$2.00 Champion Ringers, Double..... # doz \$3.00 Brown's Ringers..... # doz \$1.50 Brown's Ringers..... # doz \$1.50 Electric Hog Ringers..... # doz \$2.00 Electric Hog Ringers..... # doz \$2.00 Rivets and Barbs. Iron, list Nov. 17, '87..... 40x Copper..... 60x60x10x10 Copper Iron, Bettina Brand..... 40x Rivet Sets. —See Sets. Rods. Stair, Brass..... 25x Stair, Black Walnut..... # doz 40x Rollers. Barn Door, Sargent's Hat..... 60x10x10 Acme Moore's Anti-Friction..... 55x Union Barn Door Roller..... 70x Rope. Manila..... 3/4 in. and larger..... # 9x Manila..... 3/4 in. and larger..... # 10x Manila..... 3/4 in. and larger..... # 10x Manila Tarrad Rope..... # 9x Manila Hay Rope..... # 9x Sisal..... 1/2 inch and larger..... # 6x Sisal..... 1/2 inch and larger..... # 6x Sisal..... 1/2 inch and larger..... # 6x Sisal Hay Rope..... # 6x Sisal Tarrad Rope..... # 6x Sisal Medium Lathe Rope..... # 5x New Zealand..... 3/4 in. and larger..... # 5x New Zealand..... 3/4 in. and larger..... # 6x New Zealand Hay Rope..... # 5x New Zealand Tarrad Rope..... # 5x Note.—Manufacturers' prices on above # 1/2 less, f.o.b. factory. Cotton Rope..... # 13x16x16 Jute Rope..... # 6x6x6 Wire. List May 1, 1886..... 32x42x4 Iron, Galvanized..... 40x22x4 Cast Steel..... 40x22x4 Rules. Boxwood..... 80x10x10x30x10x10x10 Ivory..... 50x50x10x10 Starrett's Rules and Straight Edges, Steel..... 25x10x10 Sad Irons. —See Irons, Sad. Sand and Emery Paper and Cloth. —See Paper and Cloth, Sand and Emery Sash Cord. —See Cord, Sash. Sash Locks. —See Locks, Sash. Sash Weights. —See Weights, Sash. Sausage Stuffers or Fillers. —See Stuffers or Fillers, Sausage. Saws. Disston's Circular..... 45x Disston's Cross Cuts..... 45x Disston's Hand..... 30x Woodrough & W. Parlin..... 25x Hand, Panel and Rip..... 25x Narrow Champion Cross Cuts with Handles, # foot..... 20x Champion Thin Back Cross Cuts, # foot..... 23x Champion Extra Thin Back Cross Cuts, # foot..... 31x One Man Champion Cross Cuts, # foot..... 40x Wheeler, Madden & Clemson Mfg. Co., Hand, Panel and Rip..... 30x Narrow Champion Cross Cuts with Handles, # foot..... 20x Champion Thin Back Cross Cuts, # foot..... 23x Champion Extra Thin Back Cross Cuts, # foot..... 31x One Man Champion Cross Cuts, # foot..... 40x Atkins' Silver Steel Diamond X Cuts..... # foot 70x Atkins' Special Steel Dexter X Cuts..... # foot 50x Atkins' Special Steel Diamond X Cuts..... # foot 30x Atkins' Champion and Electric Tooth X Cuts..... # foot 30x Atkins' Hollow Back X Cuts..... # foot 20x Atkins' Mulay, Mill and Drag..... 40x Atkins' One-Man Saw, with handles, # foot 40x Peace Circular and Mill..... 45x Peace Hand Panel and Rip..... 25x Peace Cross Cuts..... 45x Richardson's Circular and Mill..... 45x Richardson's X Cuts..... 45x Richardson's Hand, &c..... 25x C. E. Jennings & Co., Hand, Panel and Rip..... 25x

Hack Saws—

Griffin's complete, 40x10x50x
 Griffin's Hack Saw, Blades, 40x10x50x
 Star Hack Saws and Blades, 25x
 Wureka and Crescent, 25x

Scroll—

Lester, complete, \$10.00, 25x
 Rogers, complete, \$4.00, 25x
 Barnes' Builders' and Cabinet Makers',
 \$15, 25x
 Barnes' Scroll Saw Blades, 25x

Saw Frames—See Frames, Saw.

Saw Sets—See Sets, Saw.

Saw Tools—See Tools, Saw.

Scales—

Hatch, Counter, No. 171, good quality,
 \$22.00, 40x
 Hatch, Tea, No. 161, \$20.75, 40x
 Union Platform, Plain, \$22.00, 10x
 Union Platform, Striped, \$24.00, 10x
 Chatillon's Grocers' Trip Scales, 50x
 Chatillon's Eureka, 25x
 Chatillon's Favorite, 40x
 Family, Turnbulla, 30x
 Riehle Bros.' Platform, 40x

Scale Beams—See Beams, Scale.

Scissors, Fluting, 48x

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.),
 \$5.00, 40x
 Box, 1 Handle, \$4.00, 40x
 Box, 2 Handle, \$4.00, 40x
 Deference Box and Ship, 20x
 Foot, 50x
 Ship, Common, \$3.50, 10x
 Ship, R. I. Tool Co., 10x

Screen Window and Door

Frames—See Frames.

Screw Drivers—See Drivers, Screw.

Screws.

Beach and Hand—

Bench, Iron, 55x10x55x10x10x
 Bench, Wood, Bech, \$22.25, 40x
 Bench, Wood, Hickory, 20x10x
 Hand, Wood, 25x10x25x10x
 Lag, Blunt Point, list Jan. 1, 1890, 75x10x
 Coach and Lag, Gimlet Point, list Jan.
 1, 1890, 75x75x10x
 Rod, 25x25x
 Hand Rail, Sargent, 60x10x25x
 Hand Rail, H. & F. Mfg. Co., 70x10x25x
 Hand Rail, Am. Screw Co., 70x
 Jack Screws, Millers Falls list, 50x50x25x
 Jack Screws, P. S. & W., 35x
 Jack Screws, Sargent, 60x10x25x10x
 Jack Screws, Stearns', 40x40x10x

Corb—

Humason & Beckley Mfg. Co., 40x10x50x
 Williamson's, 35x35x35x50x
 Howe Bros. & Hulbert, 35x

Machine—

Flat Head, Iron, 55x

Wood—

List January 1, 1891.
 Flat Head Iron, 72x
 Round Head Iron, 67x
 Flat Head Brass, 72x
 Round Head Brass, 65x
 Flat Head Bronze, 72x
 Round Head Bronze, 65x
 Rogers' Drive Screws, 55x

Scroll Saws—See Saw, Scroll.

Foythes.

Grain, 40x5x40x10x
 Grass, 40x10x50x

Seythe Snaths—See Snaths, Seythe

Meta.

Avi and Tool.

Alken's Sets, Ais and Tools,
 No. 20, \$10.00, 55x10x
 Fray's Adj. Tool Hds., Nos. 1, 12, 2, 18,
 \$15, 4, 12, 25x
 Miller's Falls Adj. Tool Hds.,
 No. 1, \$12, 2, \$18, 25x
 Henry's Combination Hatt., \$10.50, 40x
 Brad Sets,
 No. 42, \$10.50; No. 43, \$12.50, 70x10x50x
 Stanley's Excelsior,
 No. 1, \$7.50; No. 2, \$4.00; No. 3,
 \$5.50, 50x10x
Nail—
 Square, \$4.00, \$4.00, 40x
 Round, \$4.00, \$4.00, 40x
 Buck Prod., 27x
 Cannon's Diamond Point, \$12.50, 50x

Sheet.

Regular list, 50x10x

Saw—

Stillman's Genuine, \$5.00, 40x50x
 Stillman's Imita., \$3.25, 40x50x
 Common Lever, \$2.00, 40x50x
 Morrill's No. 1, \$15.00; Nos. 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 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817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1083, 1084, 1085, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1102, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1127, 1128, 1129, 1130, 1131, 1132, 1133, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1145, 1146, 1147, 1148, 1149, 1150, 1151, 1152, 1153, 1154, 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 1184, 1185, 1186, 1187, 1188, 1189, 1190, 1191, 1192, 1193, 1194, 1195, 1196, 1197, 1198, 1199, 1200, 1201, 1202, 1203, 1204, 1205, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1284, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1297, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1348, 1349, 1350, 1351, 1352, 1353, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1377, 1378, 1379, 1380, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1447, 1448, 1449, 1450, 1451, 1452, 1453, 1454, 1455, 1456, 1457, 1458, 1459, 1460, 1461, 1462, 1463, 1464, 1465, 1466, 1467, 1468, 1469, 1470, 1471, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1487, 1488, 1489, 1490, 1491, 1492, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 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1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1695, 1696, 1697, 1698, 1699, 1700, 1701, 1702, 1703, 1704, 1705, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1727, 1728, 1729, 1730, 1731, 1732, 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1760, 1761, 1762, 1763, 1764, 17

Tinware—stamped, Japanned and Placed, list
Jan. 30 1887.....70&100/70&10&55**Tire Benders, Upsetters, &c—**

See Benders and Upsetters, Tire.

Tools.**Coopers'—**Bradley's.....30&
Barton's.....30&30&55
L. & J. White.....20&55
Albertson Mfg. Co.....25&
Beatty's.....30&
Sandusky Tool Co.....30&30&55
Shaves, Cincinnati Tool Co.....30&**Lumber.**Ring Peavies, "Blue Line".....dos 30.00
Ring Peavies, Common.....dos 18.00
Steel Socket Peavies.....dos 32.00
Mail Iron Socket Peavies.....dos 12.00
Cant Hooks, "Blue Line".....dos 16.00
Cant Hooks, Common Finish.....dos 14.00
Cant Hooks, Mail Socket Clasp, "Blue
Line" Finish.....dos 16.00
Cant Hooks, Mail Socket Clasp, Common
Finish.....dos 14.50
Cant Hooks, Clip Clasp, "Blue Line"
Finish.....dos 12.00
Cant Hooks, Clip Clasp, Common Fin-
ish.....dos 10.00
Hand Spikes.....dos 6 ft., 15.00; 8 ft.,
11.50; 14 ft., 13.50; 16 ft., 14.50;
18 ft., 17.50; 20 ft., 21.50.
Pike Poles, Pike & Hook, dos 12 ft.,
11.50; 14 ft., 13.50; 16 ft., 14.50;
18 ft., 17.50; 20 ft., 21.50.
Pike Poles, Pike only, dos 12 ft.,
10.00; 14 ft., 11.00; 16 ft., 12.00; 18
ft., 13.00; 20 ft., 14.00.
Pike Poles, not ironed, dos 12 ft.,
10.00; 14 ft., 11.00; 16 ft., 12.00; 18
ft., 13.00; 20 ft., 14.00.
Setting Poles, dos 12 ft., 14.00; 14
ft., 15.00; 16 ft., 17.00.
Swamp Hooks.....dos 18.00**Saw.**Atkins' Perfection.....dos 12.00
Atkins' Excelsior.....dos 10.00
Atkins' Giant.....dos 14.00**Tobacco Cutters—See Cutters, To-
bacco.****Transom Lifters—See Lifters, Tran-
som.****Traps—****Game—**Newhouse.....40&40&55
Oneida Pattern.....70&101
Game, Blake's Patent.....40&10&55
Mouse and Rat—
Mouse Wood Choker, dos holes, 11&12
Mouse, Round Wire.....dos 15.00, 10&
Mouse, Cage, Wire.....dos 12.50, 10&
Mouse, Catch-em-all.....dos 12.50, 10&
Mouse, Bonanza.....dos 20.00, 10.00
Rat, Decoy.....gr 10.00, 10&
Ideal.....gr 10.00, 10&
Cyclone.....gr 10.00, 10&
Hotchkiss Metallic Mouse, 5-hole traps,
dos 90¢; in full cases, dos 75¢
Hotchkiss Imp. Rat Killer.....gr 12.50
Hotchkiss New Rat Killer.....gr 12.50
Schuyler's Rat Killer.....gr 12.50**Triers—**

Butter and cheese.....25&

Trimmers, Spoke.Bonney's.....dos 10.00, 50&
Stearns.....dos 10.00, 50&
Ives, No. 1, 15.00; No. 2, 12.50, 10&
Douglas.....dos 10.00, 20&
Cincinnati.....dos 10.00, 20&**Trowels—**Lothrop's Brick and Plastering.....30&10&55
Reed's Brick and Plastering.....15&
Diaton's Brick and Plastering.....25&
Pease's Plastering.....25&
Clement & Maynard's.....30&
Rose's Brick.....15&20&
Brade's Brick.....25&
Worrall's Brick and Plastering.....30&
Garden.....70&**Trucks, Warehouse, &c—**

R. & L. Block Co.'s list, '82.....40&

Tubes, Boiler—

See Pipe.

Twine—Flax Twine— BC. B.
No. 9, 1/4 and 1/2 Bails.....25& 31&
No. 12, 1/4 and 1/2 Bails.....25& 30&
No. 13, 1/4 and 1/2 Bails.....25& 29&
No. 24, 1/4 and 1/2 Bails.....25& 29&
No. 36, 1/4 and 1/2 Bails.....18& 29&
No. 264, Matgrass, 1/4 and 1/2 Bails.....25&
Chalk Line, Cotton, 1/4 Bails.....25&
Mason Line, Linen, 1/4 Bails.....55&
2-Ply Hemp, 1/4 and 1/2 Bails (Spring
Twine).....15& 16&
3-Ply Hemp, 1/4 Bails.....15& 16&
Cotton Wrapping, 5 Bails to 10.....15& 16&
2, 3, 4 and 5-Ply Jute, 1/4 Bails.....10&
Wool.....6& 7&
Paper.....13& 14&
Cotton Mops, 6, 9, 12 and 15 ft. to dos.....12&**Vices—**Solid Box.....50&10&50&10&55
Parallel—
Fisher & Norris Double Screw.....15&10&
Stephens.....20&25&
Parker's.....20&25&
Wilson's.....50&
Howard's.....40&
Bonney's.....40&10&
Miller's Falls.....40&10&
Trenton.....40&10&
Merrill's.....40&10&
Sargent's.....40&10&
Backus and Union.....40&
Double Screw Leg.....15&10&
Prentiss.....20&25&
Simpson's Adjustable.....40&
Moore's.....40&
Massey Quick Action.....20& 25&**Saw Vices—**Bonney's, Nos. 2 & 3, 15.00.....40&10&
Stearns's.....35&10&35&10&10&
Sargent's Silent Saw Vices.....35&10&
Hopkins's.....dos 17.50, 10&
Reading.....40&10&
Wentworth.....30&10&**Miscellaneous.**Combination Hand Vices.....gr 42.00
Cowell Hand Vices.....30&
Bauer's Pipe Vices.....10&
Cincinnati.....30&10&
Enterprise Pipe Vices, each.....33.00
Massey Combination Pipe.....40&**Wade—Price per M.**J.M.C. & W.R.A.—B.E., 11 up.....68¢
J.M.C. & W.R.A.—B.E., 9&10.....82¢
J.M.C. & W.R.A.—B.E., 8.....96¢
J.M.C. & W.R.A.—B.E., 7.....1.10
J.M.C. & W.R.A.—P.E., 11 up.....1.15
J.M.C. & W.R.A.—P.E., 9&10.....1.50
J.M.C. & W.R.A.—P.E., 8.....1.80
J.M.C. & W.R.A.—P.E., 7.....1.80
Sley's B.E., 11 up.....1.70&1.75
Sley's P.E., 11&20.....3.00& 3.25**Wagon Boxes—See Boxes, Wagon.****Washer Cutters—See Cutters, Washer.****Wagon Jacks—See Jacks, Wagon.****Ware, Hollow, Enameled, &c.****Cast Iron, Hollow—**Stove Hollow-Ware— 00&10&
Ground.....60&10&10&
Unground.....60&10&10&
White Enameled-Ware—
Mastin Kettles.....70&10&70&10&55
Boilers and Saucepans.....50&10&50&
Tinned Boilers and S'pans.....50&10&50&
Rustless Hollow-Ware.....50&50&55
Gray Enameled-Ware.....50&
Stove.....50&
Mastin Kettles.....60&10&10&
Boilers and Saucepans.....40&55**Enameled—**Agate and Granite Ware, list Jan. 1,
1889.....33&10&
Ironclad Enameled Ware.....dis 33&10&**Kettles—**Galvanized Tea-Kettles—
Inch.....6 7 8 9
Each.....55¢ 60¢ 75¢ 75¢**Standard Fiber—**Wash-Basins, 10 1/2 in.....Plain, Dec'd 2.25 2.75
Wash-Basins, 12 in.....2.25 2.75
Keelers, 11 1/2 in.....4.00
Cuspidors.....4.00
Spittoons, "Daisy," 8 in.....4.00 4.50
Peck Measure.....4.00
Half-peck Measure.....3.50
See also Pails.**Indurated Fiber—25¢**Spittoons, No. 2, dos.....\$8.40
Basins, Ringed, dos, No. 2.....\$3.00
Washbuds, Nested, Nos. 0, 1, 2 and 3 (4
pieces), nest.....\$7.50
Keelers, Nested, Nos. 1, 2, 3 and 4 (4
pieces), nest.....\$2.90
Butter Bowls, 15, 17 and 19-inch (3
pieces), nest.....\$1.70
Liquid Measures, pt., qt., 3 qt. and fun-
nel (4 pieces), set.....\$1.00
See also Pails.**Silver Plated, Hollow—**4 mo. or 5¢ cash in 30 days.
Reed & Barton.....
Meriden Britannia Co.....40&55
Simpson, Hall, Miller & Co.....40&55
Rogers & Brother.....
Hartford Silver Plate Co.....40&55
William Rogers Mfg. Co.....40&55**Washers—**State holes.....5-16 3/4 1/2 to 1 1/2
Washers.....6 5 3.50 3
In lots less than 200 B, dos, add 1/4¢, 5-
boxes 1¢ to list.**Wedges—**Iron, French Washed.....dos 3 1/2¢
Steel.....dos 3 1/2¢**Weights, Sash—**

Solid Eyes.....dos 11&12&19

Well Buckets, Galvanized—See

Buckets, Well, Galvanized.

Wheels, Well.

8 in., \$2.25; 10 in., \$2.70; 12 in., \$3.25

Wire and Wire Goods—**Iron—**Market.
Br. & Ann'd, Nos. 0 to 18.....77&1/2
Cop'd, Nos. 0 to 18.....75&Galv., Nos. 9 to 18.....67&1/2
Tin'd, Tinned list Nos. 0 to 18.....67&1/2
Stone,
Br. & Ann'd, Nos. 16 to 18.....77&1/2
Bright and Ann'd, Nos. 19 to 30.....80&
Br. & Ann'd, Nos. 27 to 30.....82&1/2
Tinned.
Tinned Broom Wire, 18 to 21, 8 B.....5&
Galvanized Fence, Nos. 8 and 9.....70&
Brass, list Jan. 18, 1884.....35&
Copper, list Jan. 18, 1884.....35&
Annealed Wire on Spools.....55&
Mastin's Brass and Cop. on Spools.....45&
Tate's Spooled, Tinned and Annealed.....55&
Tate's Spooled Cop. and Brass.....45&
Cast Steel Wire.....50&
Stub's Steel Wire.....\$6.00 to \$ 30
Steel Music Wire, 12 to 30.....60&70¢
Wire Clothes Lines, see Lines.
Wire Picture Cord see cord.**Bright Wire Goods—**

Standard list.....80&10&

Wire Cloth and Netting.Painted Screen Cloth, good quality
100 sq. ft., \$1.40
Galvanized Wire Netting.....70&10&75&**Wire, Barb.—F.o.b. Cars. Dis. 3¢**
cash in 10 days.Pittsburgh and Cleveland, 12.55 Galvan-
ized.....15.05
Allentown, Cincinnati and
Joliet.....2.65 3.15
St. Louis.....2.0 3.20
Keokuk.....2.75 3.25
Lockport, Baker Perfect.....2.35 3.35
Lawrence and Omaha.....2.90 3.40
San Francisco.....2.80 4.30**Wire Rope—See Rope, Wire.****Wrenches—**American Adjustable.....40&
Baker's Adjustable.....40&10&50&
Baker's Diagonal.....40&10&50&
Coe's Genuine.....50&25&
Coe's "Mechanics".....50&10&25&
Girard Standard.....65&10&
Lamon & Sessions' Engineers'.....60&10&
Lamon & Sessions' Standard.....70&10&
P. S. & W. Agricultural.....75&10&75
Girard Agricultural.....10&25&
Lamon & Sessions' Agric'l.....
Bemis & Call's
Pat. Combination.....35&
Merrick's Pattern.....35&
Briggs' Pattern.....25&
Cylinder or Gas Pipe.....40&10&
No. 3 Pipe.....40&10&
Aiken's Pocket (Bright).....\$6.00, 50&10&
The Favorite Pocket.....dos \$4.00, 40&
Webster's Pat. Combination.....35&
Boardman's.....30&10&
Always Ready.....35&55&
Alligator.....50&
Donohue's Engineer.....50&10&
Acme, Bright.....50&25&
Acme, Nickleplated.....40&25&
Hercules.....70&
Walker's.....55&25&
Diamond Steel.....55&25&
Cincinnati Brace Wrenches.....55&10&
Tate's Vise Wrench.....55&10&25&**Wringers, Clothes—**Am Wringer Co.'s list, July 15, 91, 2¢ cash
Colby Wringer Co., list Sept. 1, 91, 2¢ cash**Wrought Goods—**Staples, Hooks, &c., list Jan. 18, 1886.
85¢&85¢10**PAINTS, OILS AND COLORS.—Wholesale Prices.****Animal and Vegetable Oils.**Linsed, City, raw, per gal. 40 @ ..
Linsed, City, boiled.....43 @ ..
Linsed, Western, raw.....37 @ 33
Lard, City, Extra Winter.....57 @ ..
Lard, City, Prime.....54 @ 55
Lard, City, Extra No. 1.....57&45 45
Lard, City, No. 1.....57&45 45
Lard, Western, prime.....53 @ 54
Cotton-seed, Crude, prime.....@ 30
Cotton-seed, Crude, off
grades.....25 @ 28
Cotton-seed, Summer Yel-
low, prime.....36 @ 38
Cotton-seed, Summer Yel-
low, off grades.....31 @ 34
Sperm, Crude.....68 @ 70
Sperm, Natural Spring.....@ ..
Sperm, Bleached Spring.....@ ..
Sperm, Natural Winter.....78 @ 76
Sperm, Bleached Winter.....78 @ 80
Whale, Crude.....54 @ 56
Whale, Bleached Winter.....56 @ 58
Whale, Extra Bleached.....58 @ 60
Sea Elephant, Bleached
Winter.....63 @ 64
Menhaden, Crude, Sound.....@ 30
Menhaden, Crude, Southern.....@ 28
Menhaden, Light Pressed.....@ 28
Menhaden, Bleached W'ter.....33 @ 34
Menhaden, Extra Bleached.....35 @ 36
Tallow, City, prime.....@ 43
Tallow, Western, prime.....@ 44
Cocoanut, Ceylon.....64 @ 65
Cocoanut, Cochin.....74 @ 75
Cod, Domestic.....32 @ 33
Cod, Foreign.....32 @ 33
Red Elaine.....36 @ 38
Red Saponified.....5 @ 6 1/4
Bank.....@ 32
Strait.....@ 33
Olive, Italian, vls.....@ 68
Peatfoot, prime.....55 @ 56
Palm, prime, Lagos.....6 @ 6 1/2**Mineral Oils.**Black, 20 gravity, 25 @ 30
cold test.....per gal 7 1/4 @ 8
Black, 20 gravity, 15 cold
test.....@ 9
Black, 20 gravity, summer,
Cylinder light, filtered.....15 @ 20Cylinder, dark, filtered.....12 @ 15
Cylinder, dard, s'm refined.....10 @ 14
Paraffine, 23 1/2 to 24 gravity.....12&14 14
Paraffine, 25 gravity.....12&14 14
Paraffine, 28 gravity.....9 1/2 @ 10
Paraffine, red, 21 to 22 grty.....@ ..
Paraffine, red, 23 1/2 to 24 grty.....18 @ 14**Paints and Colors.**Barytes, Foreign, per ton.....\$22.00 @34.00
Barytes, Amer. floated.....30.00 @32.00
Barytes, Amer. No. 1.....19.00 @20.00
Barytes, Amer. No. 2.....13.00 @16.00
Barytes, Amer. No. 3.....11.00 @12.00
Blue, Celestial.....dos 6 @ 8
Blue, Chinese.....50 @ 55
Blue, Prussian.....35 @ 40
Blue, Ultramarine.....8 @ 25
Brown, Spanish.....1/2 @ 1
Brown, Vandyke, Amer.....3 @ 3 1/2
Brown, Vandyke, English.....6 @ 8
Carmine, No. 40, in bulk, 3.10 @ ..
Carmine, No. 40, in boxes
or barrels.....3.20 @ ..
Carmine, No. 40, in ounce
bottles.....4.20 @ ..
Chalk, in bulk.....\$20 @ 2.00
Chalk, in bbls., \$100 B.....33 @ 40
China Clay, English.....@ 18.00
Cobalt Oxide, prep'd.....2.00 @ ..
Cobalt Oxide, black.....lots 100 B, 3.00 @ ..
Cobalt, Oxide, black.....less 100 B, 3.55 @ ..
Green, Paris, in bulk.....14 @ 15 1/4
Green Paris, 170 @ 175 B.....14 1/4 @ 15 1/4
Green, Paris, small pack.....16 @ 21 1/4
Green, Chrome, ordinary.....8 @ 11
Green, Chrome, pure.....23 @ 25
Lead, Eng. B.R. white.....8 1/2 @ 10
Lead, Ann. White, dry or in oil:
Eggs, lots less than 500 B.....@ 7 1/4
Eggs, lots 500 B to 5 tons.....@ 7
Eggs, lots 5 tons to 15 tons.....@ 6 1/4
Eggs, lots 15 tons and over.....@ 6 1/2
Lead White in oil 25 B in
pails, add to keg price.....@ 1/4
Lead, White, in oil, 12 1/2 B tin
pails, add to keg price.....@ 1Lead, White, in oil, 1 to 5 B as-
sorted tins, add to keg price.
Lead, Red, bbl. and 1/2 bbl.....6 1/4 @ 7 1/4
Lead, Red, kegs.....6 1/4 @ 7 1/4
Litharge, kegs.....6 1/4 @ 7 1/4
Litharge, bbls. and 1/2 bbls.....6 1/4 @ 7 1/4
Tams, ac.—Lead and Litharge—On
lots of 500 B or over, 60 days' time or
3 1/4 % discount for cash if paid within 15
days of date of invoice.
Ocher, Rochelle.....1.25 @ 1 1/4
Ocher, French Washed.....1 1/4 @ 2 1/4
Ocher, German Washed.....1 1/4 @ 2
Ocher, American.....1 1/4 @ 1 1/4
Orange Mineral, English.....9 @ 9 1/4
Orange Mineral, French.....10 @ 10 1/4
Orange Mineral, German.....9 1/4 @ 10
Orange Mineral, American.....8 @ 8 1/4
Paris White, English Chif-
fons.....1.00 @1.15
Paris White, American.....70 @ 75
Red, Indian, English.....5 1/4 @ 7
Red, Indian, American.....3 @ 6 1/4
Red, Turkey.....9 @ 14
Red, Tuscan.....9 @ 11
Red, Venetian, American.....\$100 B, 1.00 @1.25
Sienna, Italian, Burnt and
Powd. B.....5 @ 6 1/4
Sienna, Ital., Burnt Lumps.....1 1/4 @ 3 1/4
Sienna, Ital., Raw Powd.....5 @ 6 1/4
Sienna, Ital., Raw Lumps.....2 @ 3 1/4
Sienna, American, Raw.....1 1/4 @ 1 1/4
Sienna, American, Burnt
and Powdered.....1 1/4 @ 1 1/4
Talc, French.....1 1/4 @ 1 1/4
Talc, American.....1 1/4 @ 1 1/4
Terra Alba, P'd, \$100 B.....20 @ 1.00
Terra Alba, English.....50 @ 60
Terra Alba, American No. 1
70 @ 75
Terra Alba, American No. 2
40 @ 50
Umber, Turkey, Bnt. and
Powd.....3 1/4 @ 4
Umber, Turkey, Bnt. La
and Powd.....3 1/4 @ 4
Umber, Turkey, R'w Lmps
Umber, Turkey, Bnt. Amer.
Umber, Turkey, R'w Amer.
Yellow, Chrome.....10 @ 25
Vermilion, Amer. Lead.....11 1/4 @ 17
Vermilion, Quicksilver, bulk.....64 @ 66
Vermilion, Quicksilver, bags.....65 @ 67
Vermilion, Quicksilver,
small pkgs.....60 @ 61
Vermilion, English Import.....80 @ 85Vermilion, imitation, Eng. 8 @ 25
Vermilion, Trieste.....87 1/4 @ 90
Vermilion, Chinese.....90 @ 95
Whiting, Common, \$100 B.....40 @ 45
Whiting, Gliders.....50 @ 55
Zinc, American, dry.....4 1/4 @ 5
Zinc, French, Red Seal.....@ 8 1/4
Zinc, French, Green Seal.....@ 7
Zinc, French, V. M. X.....@ 7
Zinc, Antwerp, Red Seal.....@ 7 1/4
Zinc, Antwerp, Green Seal.....@ 8 1/4
Zinc, German, L. Z. O.....@ 6 1/4
Zinc, V. M. in Poppy Oil, G.
Seal, lots of 1 ton and
over.....10 1/4 @ 11 1/4
lots less than 1 ton.....11 @ 11 1/4
Zinc, V. M. in Poppy Oil,
Red Seal.....10 @ 10 1/4
lots of 1 ton and over.....10 1/4 @ 10 1/4
lots less than 1 ton.....10 1/4 @ 10 1/4
Discourra.—French Zinc.—Discounts
to buyers of 10-bbl. lots of one or as-
sorted grades, 1 1/2 % bbls, 3 1/2 % 50 bbls,
4 1/2 %. No discount allowed on less
than bbl. lots.**Colors in Oil.**Blue, Chinese.....dos 35 @ 40
Blue, Prussian.....29 @ 45
Blue, Ultramarine.....12 @ 18
Brown, Vandyke.....7 @ 12
Green, Chrome.....8 @ 13
Green, Paris.....16 @ 18 1/4
Sienna, Raw.....7 @ 14
Sienna, Burnt.....7 @ 14
Umber, Raw.....7 @ 10
Umber, Burnt.....7 @ 10**Putty.**In wooden pails.....@ .01 1/4
In tin cans......02 @ .02 1/2
In bladders......00 @ .02 1/2**Spirits Turpentine.**In regular bbls.....37 1/2 @ ..
In machine bbls.....38 @ ..**Glue.**Low Grade.....dos 8 @ 10
Cabinet.....12 @ 14
Medium White.....13 @ 15
Extra White.....17 @ 20
French.....10 @ 22
English.....10 @ 16
Irish.....13 @ ..

CURRENT METAL PRICES.

OCTOBER 7, 1891.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

IRON AND STEEL.

Bar Iron from Store.

Common Iron:	
1 to 6 in. x 1/2 to 1 in.	1/2 lb 1.90 @ 2.00¢
Refined Iron:	
1/2 to 2 in. round and square.	1/2 lb 2.00 @ 2.20¢
1 to 4 in. x 1/2 to 1 1/2 in.	1/2 lb 2.10 @ 2.30¢
4 1/2 to 6 in. x 1/2 to 1 in.	1/2 lb 2.20 @ 2.40¢
1 to 6 in. x 1/2 and 5-16	1/2 lb 2.30 @ 2.50¢
Rods—1/2 and 1-16 round and sq.	1/2 lb 2.30 @ 2.50¢
Bands—1 to 6 x 3-16 to No. 12	1/2 lb 2.30 @ 2.50¢
"Burden Best" Iron, base price.	1/2 lb 3.00¢
Burden's "H. B. & S." Iron, base price.	1/2 lb 2.80¢
"Ulster"	1/2 lb 3.00¢
Norway Bars	1/2 lb 4.00¢
Norway Shapes	1/2 lb 4.50 @ 5.00¢

Merchant Steel from Store.

Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2 3/4¢
Best Cast Steel, base price in small lots	8¢
Best Cast Steel Machinery, base price in small lots	5¢

Sheet Iron from Store.

Common American. R. G. Cleaned.	
10 to 16	1/2 lb 2.00 @ 3.00¢
17 to 20	1/2 lb 3.15 @ 3.25¢
21 to 24	1/2 lb 3.35 @ 3.35¢
25 and 26	1/2 lb 3.35 @ 3.60¢
27	1/2 lb 3.50 @ 3.62¢
28	1/2 lb 3.65 @ 4.10¢
B. R. 2d qual.	1/2 lb 4.75 @ 5.00¢
Galv'd, 14 to 20, 1/2 lb	1/2 lb 4.75 @ 5.00¢
Galv'd, 21 to 24, 1/2 lb	1/2 lb 5.12 @ 5.35¢
Galv'd, 25 to 26, 1/2 lb	1/2 lb 5.50 @ 5.70¢
Galv'd, 27	1/2 lb 5.90 @ 6.10¢
Galv'd, 28	1/2 lb 6.25 @ 6.10¢
Patent Planchet	1/2 lb 10¢ @ 11¢
Russia	1/2 lb 10¢ @ 11¢
American Cold Rolled B. B.	1/2 lb 5¢ @ 7¢
Craig Polished Sheet steel	1/2 lb 8 1/2¢

English Steel from Store.

Best Cast	1/2 lb 15¢
Extra Cast	1/2 lb 16¢
Swaged Cast	1/2 lb 16¢
Best Double Shear	1/2 lb 15¢
Blister, 1st quality	1/2 lb 12¢
German Steel, Best	1/2 lb 10¢
2d quality	1/2 lb 9¢
3d quality	1/2 lb 8¢
Sheet Cast Steel, 1st quality	1/2 lb 15¢
2d quality	1/2 lb 14¢
3d quality	1/2 lb 12 1/2¢
R. Mushet's "Special"	1/2 lb 20¢
"Titanic"	1/2 lb 20¢

METALS.

Banca, Pigs	22 1/2¢
Straits, Pigs	22¢
Straits in Bars	24¢

Tin Plates.

Charcoal Plates.—Bright.	
Melyn Grade	1/2 lb 6.75
IC, 10 x 14	1/2 lb 7.00
IC, 12 x 12	1/2 lb 7.00
IC, 14 x 20	1/2 lb 7.75
IC, 20 x 28	1/2 lb 13.70
IX, 10 x 14	1/2 lb 8.25
IX, 12 x 12	1/2 lb 8.50
IX, 14 x 20	1/2 lb 8.25
IX, 20 x 28	1/2 lb 16.50
DC, 12 1/2 x 17	1/2 lb 7.25
DX, 12 1/2 x 17	1/2 lb 7.75
Calland Grade	1/2 lb 6.70
IC, 10 x 14	1/2 lb 6.95
IC, 12 x 12	1/2 lb 6.80
IC, 14 x 20	1/2 lb 7.85
IX, 10 x 14	1/2 lb 8.20
IX, 12 x 12	1/2 lb 7.85
IX, 14 x 20	1/2 lb 7.85
Allaway Grade	1/2 lb 6.35
IC, 10 x 14	1/2 lb 6.50
IC, 12 x 12	1/2 lb 6.85
IC, 14 x 20	1/2 lb 12.40
IX, 10 x 14	1/2 lb 7.50
IX, 12 x 12	1/2 lb 7.80
IX, 14 x 20	1/2 lb 7.50
IX, 20 x 28	1/2 lb 15.00
DC, 12 1/2 x 17	1/2 lb 6.80
DX, 12 1/2 x 17	1/2 lb 7.00
Coke Plates.—Bright.	
Steel Coke.—IC, 10 x 14, 14 x 20	1/2 lb 5.70
10 x 20	1/2 lb 8.10
20 x 28	1/2 lb 11.70
IX, 10 x 14, 14 x 20	1/2 lb 5.80
BV Grade.—IC, 10 x 14, 14 x 20	1/2 lb 5.70
Charcoal Plates.—Terne.	
Dean Grade.—IC, 14 x 20	1/2 lb 5.60
20 x 28	1/2 lb 10.75
IX, 14 x 20	1/2 lb 6.80
20 x 28	1/2 lb 12.50
A becarne Grade.—IC, 14 x 20	1/2 lb 5.40
20 x 28	1/2 lb 10.75
IX, 14 x 20	1/2 lb 6.35
20 x 28	1/2 lb 12.35

Tin Boiler Plates.

IX, 14 x 26	112 sheets	@ \$13.50
IX, 14 x 28	112 sheets	@ 13.75
IX, 14 x 31	112 sheets	@ 15.25

Copper.

Duty: Pig. Bar and Ingot, 1 1/4¢; Old Copper, 1¢
 Manufactured (including all articles of which Copper is a component of chief value), 3 1/2¢ ad valorem.

Ingot

Law	@ 13 1/4¢
Ansonia Grade Arizona	@ 13¢
Ansonia Grade Casting	@ 12 1/4¢

Sheet and Bolt

Prices adopted by the Association of Copper Manufacturers of the United States, December 5, 1890. Subject to a discount of 10% according to size of order.

Not wider than	Not longer than	Not longer than	Weights per square foot and prices per pound.
Over 64 oz.	Over 64 oz.	Over 64 oz.	Over 64 oz.
30-72	30-72	30-72	30-72
30-96	30-96	30-96	30-96
30-120	30-120	30-120	30-120
30-144	30-144	30-144	30-144
30-168	30-168	30-168	30-168
30-192	30-192	30-192	30-192
30-216	30-216	30-216	30-216
30-240	30-240	30-240	30-240
30-264	30-264	30-264	30-264
30-288	30-288	30-288	30-288
30-312	30-312	30-312	30-312
30-336	30-336	30-336	30-336
30-360	30-360	30-360	30-360
30-384	30-384	30-384	30-384
30-408	30-408	30-408	30-408
30-432	30-432	30-432	30-432
30-456	30-456	30-456	30-456
30-480	30-480	30-480	30-480
30-504	30-504	30-504	30-504
30-528	30-528	30-528	30-528
30-552	30-552	30-552	30-552
30-576	30-576	30-576	30-576
30-600	30-600	30-600	30-600
30-624	30-624	30-624	30-624
30-648	30-648	30-648	30-648
30-672	30-672	30-672	30-672
30-696	30-696	30-696	30-696
30-720	30-720	30-720	30-720
30-744	30-744	30-744	30-744
30-768	30-768	30-768	30-768
30-792	30-792	30-792	30-792
30-816	30-816	30-816	30-816
30-840	30-840	30-840	30-840
30-864	30-864	30-864	30-864
30-888	30-888	30-888	30-888
30-912	30-912	30-912	30-912
30-936	30-936	30-936	30-936
30-960	30-960	30-960	30-960
30-984	30-984	30-984	30-984
30-1008	30-1008	30-1008	30-1008
30-1032	30-1032	30-1032	30-1032
30-1056	30-1056	30-1056	30-1056
30-1080	30-1080	30-1080	30-1080
30-1104	30-1104	30-1104	30-1104
30-1128	30-1128	30-1128	30-1128
30-1152	30-1152	30-1152	30-1152
30-1176	30-1176	30-1176	30-1176
30-1200	30-1200	30-1200	30-1200
30-1224	30-1224	30-1224	30-1224
30-1248	30-1248	30-1248	30-1248
30-1272	30-1272	30-1272	30-1272
30-1296	30-1296	30-1296	30-1296
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30-1344	30-1344	30-1344	30-1344
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30-1896	30-1896	30-1896	30-1896
30-1920	30-1920	30-1920	30-1920
30-1944	30-1944	30-1944	30-1944
30-1968	30-1968	30-1968	30-1968
30-1992	30-1992	30-1992	30-1992
30-2016	30-2016	30-2016	30-2016
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30-2472	30-2472	30-2472	30-2472
30-2496	30-2496	30-2496	30-2496
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30-3168	30-3168	30-3168	30-3168
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30-3240	30-3240	30-3240	30-3240
30-3264	30-3264	30-3264	30-3264
30-3288	30-3288	30-3288	30-3288
30-3312	30-3312	30-3312	30-3312